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THE NEW SCHOLASTICISM

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EDITED BY

EDWARD A. PACE AND JAMES H. RYAN

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THE
NEW SCHOLASTICISM
A Quarterly Review of Philosophy

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THE *DE ORTU SCIENTIARUM* OF ROBERT KILWARDBY (d. 1279)

THE *De Ortu Scientiarum,* the *De Unitate Formarum,* the *De Natura Relationis,* and the *De Concientia* seem to be the only four extant original treatises by Kilwardby, the rest of his works [1] being commentaries on the writings of Aristotle, of Porphyry, of Priscian, of Boethius, and on the *Sentences* of the Lombard. The subject-matter of the *De Ortu Scientiarum* is, of course, not original; it is based on the Aristotelian gradation of the sciences which had already been utilized by Boethius and Isidore, and developed by Hugh of St. Victor, Gundissalinus, and the numerous encyclopaedists that flowered in Kilwardby's own century. This, however, does not mean that the *De Ortu* is either a series of extracts from Aristotle or a mosaic of borrowings from those who had taken over his theories. Aristotle's influence, which is perhaps most obvious in the chapters devoted to the speculative sciences, is strong, but always moderated by the background of Christian thought into which it has to fit; thus, when it clashes with the Augustinian view that we can have a purely intellectual knowledge of God apart from the instrumentality of the senses, or with the still more widely

[1] The earliest list from a Stams MS has been printed by H. Denifle in *Arch. f. Litt. u. Kirchen Gesch.* (Berlin, 1886), Bd. II, 236.

accepted doctrine that perfect happiness cannot be obtained in this life, it is rejected without reserve. Again, Boethius, and especially Isidore, are frequently referred to or adopted, but only when their doctrines will harmonize with the development of Kilwardby's own thought. So, too, Hugh of St. Victor is greatly admired by our author, though he comes in for much adverse criticism, particularly in regard to his classification of the mechanical sciences which he raises to the rank of one of the primary divisions of philosophy. As for Gundissalinus, whose *De Divisione Philosophiae*[2] is almost always alleged to be the immediate source upon which Kilwardby relies, I should like to make it excruciatingly plain that the dependence is of the most tenuous kind and not nearly as obvious as the influence of Aristotle. Among my most significant reasons for rejecting the common allegation are: (a) the conspicuous absence of the Neo-Platonic background of Gundissalinus which had been derived from his Arabian sources, notably Alfarabi whose *De Ortu Scientiarum* he had translated and extensively used; (b) the differences in their schemes of philosophy, for under the practical sciences Gundissalinus omits the mechanical arts, transposing them (with the exception of medicine which he makes a separate division) as subdivisions of Natural Science, under word-science he includes Poetics, and under Mathematics much is included that finds no place in Kilwardby; (c) the frequent conscious repudiations of Gundissalinus (cf. pp. 12, 22).

We must, then, conclude that though Kilwardby has much in common with his predecessors, his compendium of the sciences remains a highly individualistic treatise and one which probably deserves to be called in the words of Baur[3] "the most significant introduction to philosophy produced in the Middle Ages." Its significance seems to me to rest on at least two main features: (a) its general account of the evolution of the sci-

[2] Ed. L. Baur, *Beitraege* series, Bd. IV, Heft 2-3 (Muenster, 1903).
[3] *Op. cit.*, p. 368.

ences. Man begins with practice out of which arise particular problems suggested by the needs and interests of life; these problems lead to a variety of opinions and to confusion of thought until in self-defense man arranges them in groups, thereby enabling himself to come to general conceptions and ultimately to pure scientific reflections; finally, man discovers that the particular groups converge toward some final aim and so he comes to aspire to a systematic knowledge whose parts have organic connection, and (b) Kilwardby's appreciation of the fact that the Natural and the Practical Sciences are not inferior to the other branches of knowledge, for each of these branches, whether theoretical or practical, has a particular aspect of reality for its end and this aspect cannot become the end of any other science.

We must pass now to more technical matters connected with the *De Ortu Scientiarum,* namely, to its date and the extant manuscripts. Concerning its date I can offer no definite information, but I would suggest that it was written before the period of 1240-45, when Kilwardby appears to have joined the Dominicans. My reason for hazarding this suggestion is the remark of Nicholas Trivet in his *Annales*[4] to the effect that after Kilwardby entered the Order he devoted himself entirely to theology and especially to the study of the Scriptures and the Fathers, a remark from which I infer that the *De Ortu Scientiarum,* on account of its predominantly Aristotelian point of view, must have been written while its author was still a secular. As a really perilous conjecture, for which at present I have practically no support, I should like to propose that the treatise under consideration was written some time between the year 1229, the date of the great dispersion of the University of Paris where Kilwardby had been teaching for several years, and the period of 1240-45, an interval of ten years or so when Kilwardby might well have been teaching at Oxford.

[4] Ed. T. Hog (London, 1845), p. 278.

Of the *De Ortu Scientiarum,* of which the authenticity is established beyond a doubt by ascriptions in thirteenth-century manuscripts, ten extant manuscripts are known:

(1) Oxford, Merton 261. Third quarter of thirteenth century. What was probably an ascription to Kilwardby is cut through on the opening page, but the fly leaf has in a hand of c. 1350 "Kylwardby de ortu scientiarum."

(2) Oxford, Balliol 3. Beginning of fourteenth century. Ascribed to Kilwardby.

(3) Oxford, Bodl. Digby 204. Fourteenth century. Ascribed to Kilwardby.

(4) Brit. Mus. Cotton, Vitellius A 1. Probably fifteenth century. Ascribed to Kilwardby.

(5) Vatic. Lat. 5328. Fourteenth or fifteenth century. Anonymous.

(6) Paris, Bib. Nat. Lat. 16390. Thirteenth century. Wrongly ascribed to Robertus de Valle Verbi.

(7) Paris, Bib. Nat. Lat. 15449. Thirteenth century. Incomplete. Ascribed to Kilwardby.

(8) Bruges, Bib. Nat. 424. Thirteenth century. Ascribed to Kilwardby.

(9) Bruges, Bib. Nat. 510. Fourteenth century. Incomplete.

(10) Florence, Bib. Nat. Laur. IV, 689. Wrongly ascribed to Bonaventura.

None of these manuscripts has been printed but the chapter headings are to be found in the edition of the *De Div. Phil.* of Gundissalinus by L. Baur in the *Beitraege* series, Bd. IV, Heft 2-3, pp. 369-75, and Chapters 27 and 53, in their entirety, in B. Hauréau, *Notices et Extraits* (Paris, 1892), t. 5, pp. 116-119. Of the manuscripts I have used Merton 261, but I have relied mainly on a typescript edition made by Reverend Bernard Delaney, O. P., from the first four manuscripts. I should

like here to express my appreciation of his generosity in allowing me to use these unpublished fruits of his labor. I pass now to the contents of the *De Ortu Scientiarum*.

Human knowledge, we are told in the opening chapters, falls into three distinct classes: the first arises through Divine Revelation concerning superhuman beings and the way of life which is essential to the salvation of mankind; the second, termed "Philosophy", comes into being solely through the processes of human ratiocination and includes within its scope roughly, what we should call today, the arts and sciences, incidentally contributing to the art of living well because all knowledge disposes toward a good life; the third, referred to as "magic", also originates in an activity of reason, but in a reprehensible activity wherein reason, under the influence of the passions and of evil spirits, arrives only at harmful misrepresentations of things and not, like philosophy, at the apprehension of the truth of things in their eternal reasons. With the first and third classes of human knowledge Kilwardby is not professedly concerned, and hence we shall pass immediately to his concentration on the philosophical sciences.

Chapter four, fol. 19 b,[5] begins promisingly by attempting what, in my opinion, should be an indispensable preamble to any philosophy of the sciences, namely, some account of the nature of knowledge; but the attempt amounts to little more than an assertion of acquiescence in two Aristotelian conceptions: (a) that knowledge presupposes a natural innate desire in man, and (b) that it would be impossible without the cooperation of the senses in virtue of which we come to an understanding of practical conclusions, of universals, and of principles of demonstration. The account is further defective inasmuch as it assumes that reason alone functions in the acquisition of the philosophical sciences, for in all such knowledge

[5] The foliation throughout this article refers to Merton MS 261.

opinion and conjecture, faith and hope, and especially memory with all its inadequacies and lacunae, play an extremely significant part.

When Kilwardby comes to the consideration of philosophy itself, he gives us no definite statement of what he understands by this term. From his text, however, it is clear that he thinks of it neither as a co-ordinator of, and arbitrator between, the various departments of knowledge, nor as concerned with the presuppositions of the sciences, but merely as a nebulously inclusive term for all the branches of speculative and practical knowledge. Hence it will not surprise us to find these branches, together with their respective sub-divisions, based not on any differences of method or on relations of priority or of origination, as the title of the treatise under consideration might lead us to suppose, but on the somewhat arbitrary criterion of their subject-matter, arbitrary because more than one science is required to deal with the complexity of any object and also because the sciences are growing and cannot be laid at rest in any final system.

Following Isidore's *Etymol.* 2, c. 19 (P. L. 81: 141-2), Kilwardby asserts that the subject-matter of the speculative sciences is "Divine things", by which he means God as the First Substance and the creatures conditioned by Him, i. e., not coming into temporal and contingent existence through any human activity, and of the practical sciences "human things", i. e., the works and words of mankind. The things conditioned by God are in Ch. 5, fol. 19 d further sub-divided into Aristotle's three classes, each of which is the domain of a special science; thus, mobile and material things considered as such fall under the survey of physics; mobile and material things considered not as such but as abstracted from motion and matter constitute the sphere of mathematics; and things which are entirely immobile and separated from matter come within the confines of metaphysics. Before dealing at length with these several specula-

tive sciences, it may be profitable to provide here a scheme of Kilwardby's classification of the sciences in order that we may foresee the lines along which the *De Ortu Scientiarum* will evolve.*

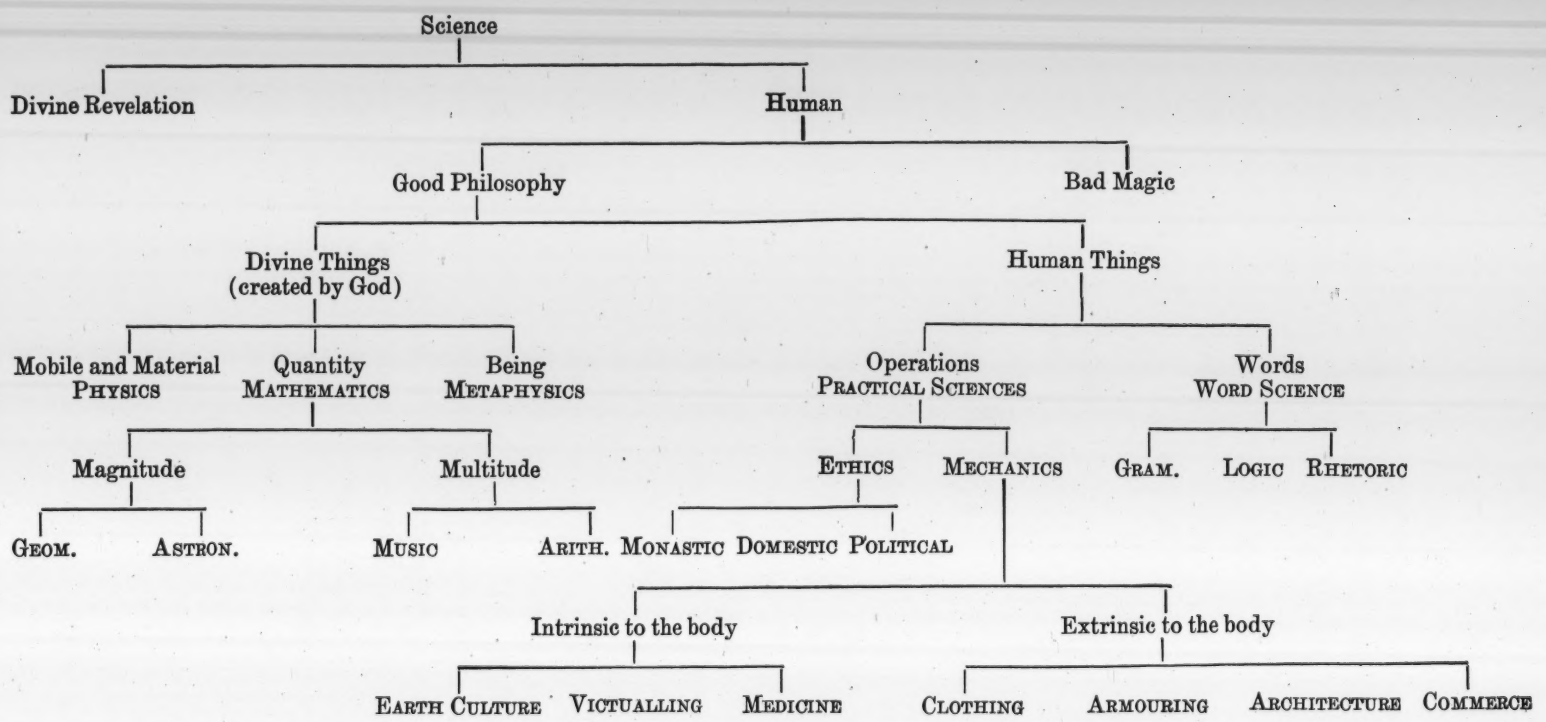
Physics

Physics, we are told in Ch. 6, f. 20 a, deals with the common nature of mobile and material things. It originated, according to Aristotle, in man's wonder at the coming to be, the passing away, and the change in natural bodies, and in his later discovery that they were due to the active and passive qualities of these bodies, qualities which philosophers termed 'nature' and which in animate beings are the functionings of the soul and in inanimate things, with the exclusion of artificial things, of active potencies or *rationes seminales.* With these active potencies of the lower bodies co-operates the circular motion of the heavenly bodies; but while the lower bodies change in respect of substance, quantity, quality, and position, the heavenly bodies are subject only to local change initiated solely by an extrinsic First Mover.

In elaborating what is involved in the changes of natural things Kilwardby observes in Ch. 8, f. 21 b, that in addition to *natura* or the power of movement and change, physics, if it is to be complete, must consider: (a) The principles of matter, form, and privation, which are presuppositions of all becoming; (b) The First Mover and the souls of animate things and not, of course, as substantial natures but merely as principles of motion; (c) Place and time in which all change takes place; (d) [added in Ch. 9, f. 21 c, as being somewhat incidental to physics] the principle of rest as the privation of motion.

Such an account of the extent of physics is, of course, closely allied to the doctrine of Aristotle, which likewise identifies the subject with a sort of metaphysics of nature; the main differ-

* See following page.



For purposes of comparison I give here St. Thomas's classification of the sciences in his Commentary on the *Post An.* This work, like the *Speculum Mundi* of Vincent of Beauvais (d. 1264), was probably much later than the *De Ortu Scientiarum* of Kilwardby.

I. Philosophia realis (a) Theorica (naturalis, mathematica, divina).
(b) Practica (ethica vel monastica, economia, politica).

II. Philosophia rationalis—Logica.

ence lies in Kilwardby's exclusion of such important topics as the four causes, chance, teleology and necessity, continuity, infinity [6] and the void, all of which find a place in the *Physics.*

We should naturally expect the chapter on physics to be followed by others on cosmography, physical geography, chemistry, and biology, but these subjects, as the scheme on page 8 shows, are not discussed by Kilwardby. In Ch. 10, f. 21 d, however, he informs us, without indicating his own attitude, that Aristotle regarded them as coming not within the consideration of mobile body *in general,* which falls to the lot of physics, but within that of mobile body *in particular* and as, therefore, necessitating separate treatment in the *De Caelo, De Generatione et Corruptione, Meteorologica,* and in his various biological and psychological treatises.

Mathematics

Mathematics, the second of the speculative sciences, is described, when contrasted with physics, as treating of mobile and material things considered not as such, but as abstracted from motion and matter, i. e., as deprived of all their concrete sensible determinations. Thus deprived, their only characteristics would be those that fall within the category of quantity, and hence in Ch. 11, seq., f. 22. d, seq., where mathematics comes up for detailed discussion it is said, after the fashion of Aristotle, to treat of quantity, and according to its method of treatment to be differentiated into its various sub-divisions; thus quantity treated as magnitude or as continuous constitutes the science of geometry, if the magnitude measured be that of terrestrial bodies, and the science of astronomy, if it be that of celestial bodies; whereas quantity treated as multitude or as discrete comes within the sphere either of arithmetic or of

[6] Infinity is discussed at great length in Ch. 24, f. 29 c, seq., where it is said to come within the domain of both physics and geometry.

music. Let us now consider Kilwardby's views on each of these mathematical sciences.

Citing Isidore, III, C. XI (P. L. 82: 161) as his source, Kilwardby asserts in Ch. 11, f. 22 d, what was really a unanimous Greek tradition, namely, that geometry originated with the Egyptians because the overflowing of the Nile obliterated the boundaries between holdings of land upon which taxation was based and by so doing necessitated the institution of a system of accurate measurements. But strictly speaking, the geometry that was invented by the Egyptians meant little more than a few empirically obtained rules for measuring surfaces and volumes; it was the Greeks themselves from Pythagoras onward who created geometry as a demonstration science.

If Kilwardby fails to make a distinction between pure and applied geometry when he is discussing the origin of this branch of mathematics, he remedies this defect when he comes to an indication of its scope, for on ff. 23 a and 25 a he observes that while geometry is primarily occupied not with material things but with mathematical lines and angles and their relations as objects of pure thought, it may be extended to include the measurement of height, of plane surfaces, and of solid capacity, or what we should call mensuration. Another form of applied geometry is to be found in perspective which in Ch. 13, f. 24 a, is described as the application of the principles and conclusions of geometry to the different modes of vision, refraction, and reflection, and in Ch. 17, f. 26 c, after the manner of Aristotle in *Phys.* II (194a 10), as considering lines and rays in their physical aspect and in relation to sight, and not as abstracted.

The second mathematical science to be discovered by man was astronomy. This science, though concerned like pure geometry with continuous quantity, cannot be regarded as an accidental variation of geometry on the grounds that it covers the mobile magnitude of celestial bodies, while geometry deals with magnitude *simpliciter secundum se*; they are, we are told in Ch. 16,

two distinct sciences because the continuous quantity of geometry is abstracted from things that are generically different, while that of astronomy exists in one type of thing only, viz., celestial bodies. More specifically, the realm of astronomy includes the magnitudes, the distances from each other and from the earth, the movements and number of the planets and fixed stars. Kilwardby thinks that these confines of astronomy, which in Ch. 12, f. 23 c, he admits are taken over from Isidore III, c. 27 (P. L. 82: 170), might well be extended to include: (1) physical astronomy whose survey would cover the effects of celestial bodies on such terrestrial events and processes as man's health, fertility, storms, etc., and (2) astrology which attempts to forecast future events from star-gazing. He adds, however, that (1) could be known with certainty only by God and the good spirits, and that (2), being based on lies and superstitions, is not really a science at all.

Astronomy and geometry, we learn from Ch. 14, f. 24 c, are the only two mathematical sciences which are related to physics, and they are so related in virtue of the fact that continuous quantity or magnitude is considered both by the physicist and the mathematician, though the former considers it as the field of activity for the four causes or as the subject of power, action, and becoming, while the latter considers it as abstracted from all bodies and natural principles and concentrates on formal cause alone.

We pass now to those members of the quadrivium that are concerned with quantity as discrete rather than as continuous. Speaking first of music, our Dominican remarks apropos of its origin that though Jubal before the flood acquired some knowledge of music, the discovery of the cause of euphony must be attributed, as Boethius in I *Music* (P. L. 63: 1173 D) says, to Pythagoras who struck hammers of unequal weight, stretched strings of unequal tension (*intensio*) and used reeds of varying length, and thereby came to the discovery that

the inequality of sounds could be reduced to harmony in a certain numerical proportion. Kilwardby's own definition of music, which he contrasts with that of Gundissalinus, is incidentally very typical of his attitude toward that philosopher; it runs (Ch. 18, f. 27 c): "*Armonia autem nichil aliud est quam rerum diversarum concors adinvicem coaptacio sive modificacio. Musicam autem sonoram sic diffinit Gundissalinus*[7]*— pericia modulacionis sono cantuque consistens; sed estimo precedentem diffinicionem esse compleciorem.*"

In a later chapter (Ch. 21, f. 28 a), where music is differentiated from both natural Science and Mechanics, we get some indication of Kilwardby's distinction between the theory and the practice of music. There we are told that though music deals with natural things, viz., sounds and voices, it is a mathematical, rather than a natural, science because it does not deal with these things as subject to change and movement, and further it regards not the motions or vibrations of harmonious sounds but the essential quality of modulation and proportion in relation to one another. Neither can music be regarded as mechanical simply because instruments may be played by people without any theoretical knowledge of this science, for conversely a mathematical musician, who comprehends the nature of harmony and the numerical proportion in which it consists, may not be able to sing or to perform upon any instrument.

Quantity as discrete is not only the subject of music, but also of arithmetic. How, then, are these two sciences to be differentiated? Certainly, we are told, not after the fashion of Boethius, who distinguishes arithmetic as treating of absolute number from music as treating of relative number, for arithmetic too treats of relative number and could only be limited to 'abstract' if 'abstract' were opposed to concrete. The differentiation would be more acceptable, declares Kilwardby in

[7] *De Div. Phil.*, ed. L. Baur (Muenster, 1903), p. 96: 9.

Ch. 20, f. 27 d, if the subject of music were defined as harmonious relative number. He has already told us in Ch. 19, f. 27 c, that the true subject of arithmetic is the theory of numbers, the science of numbers in pure abstraction—an announcement in line with the tradition of all his predecessors and one which was current until the rapid growth of trade and commerce brought about the gradual restriction of arithmetic to the art of computation. Since number is abstract, and only to be apprehended by the intellect, arithmetic was the most recent of the mathematical sciences to be discovered because all human inquiry begins with things that are nearest to the sense and, for that reason, better known. Nevertheless, our author remarks in Ch. 22, f. 28 d, arithmetic is presupposed by all the other departments of mathematics; thus, music presupposes it because harmony is a question of number, astronomy because astronomy is concerned with the measurement of the mobile magnitudes of the celestial bodies, and geometry because geometry treats of terrestrial magnitudes, numerically disposed.

Before dismissing Kilwardby's account of the mathematical sciences there are one or two observations to be made. First, certain omissions leave that account incomplete. Thus, mechanics which, in our sense of the term, depends on solid geometry or stereometry is ignored. Algebra is merely mentioned in Ch. 22, f. 28 c, as a part of arithmetic which is useful in astronomy, in spite of the fact that, by Kilwardby's day, the separate treatise which had been devoted to this science by the Arabian Alkarismi in the first quarter of the ninth century had had an extensive circulation, and that with Jordanus Saxo of the first half of the twelfth century a fairly workable algebraical symbolism had come into existence.

Again, it is obvious that our Dominican's account of the quadrivium is mainly a synthesis of the salient features in the teaching of Aristotle, Boethius, and Isidore with little indication of his own personal point of view. Thus, under arithmetic

he gives no statement of his acceptance or rejection of the old doctrine that number reveals the structure of the universe, under astronomy he offers no indication of his view of the physical universe, and under perspective no hint of his attitude toward the attempt of certain of his contemporaries to turn the discovery of the laws of refraction and reflection to practical account.

Metaphysics

Finally, though Kilwardby frequently refers to mathematics as concerned with entities deprived of all their concrete sensible determination, it never occurs to him to ask what status such entities possess or whether pure mathematics, being unconditioned by anything but the nature of mind itself, is not merely a part of logic.

With Ch. 26 we come to the third speculative science, namely, metaphysics, which is discussed last of all because its subject-matter, being substance as substance, it is the most abstract member of this group. The least abstract is natural science because it considers mobile bodies as mobile, while mathematics has an intermediate abstractness on account of its consideration of quantity which alone remains after substance and mobility, with its accidental differences, have been separated out. A survey of the relation of metaphysics to the two other speculative sciences will enable us to ascertain its own particular province.

In as far as metaphysics deals with substances, including matter and form, the soul and the heavenly movers, it resembles natural science, we are told in Ch. 28, f. 33 b; but in so far as it considers them merely *as* substances, it differs from this science which is interested in substances as mutable or, at least, as related to movement. Further, the method of approach in the two subjects is different, for metaphysics begins with God and proceeds to other beings, whereas natural science begins with

bodies, investigating their simplicity and compositeness, their heaviness and lightness.

With mathematics, too, metaphysics has both a point of contact and a dissimilarity, for while both are occupied with quantity, mathematics is concerned with quantity *as quantity,* and all the properties and accidents that appertain to it as such, but metaphysics is concerned with it as being or as *in* substance (Ch. 29, f. 33 d).

In Ch. 32, f. 38 b, Kilwardby raises the question whether the points of resemblance between metaphysics and the other two speculative sciences do not sufficiently outweigh the differences for us to regard natural science and mathematics as sub-divisions of metaphysics. Those who think they do support their position by contending (1) that metaphysics treats of being in general while the other two sciences consider some special portion of being, (2) that metaphysics ascertains the 'propter quid' of many things of which the other sciences give only the 'quia,' and (3) that metaphysics, as Aristotle shows, deals with First Causes and First Principles, the others with secondary causes. But such contentions Kilwardby finds unacceptable, for though they bring out the significant fact that metaphysics overlaps natural science and mathematics, they cannot compensate for the absence of two conditions that are absolutely essential for the classification of natural science and mathematics as sub-divisions of metaphysics; these conditions are (a) there should be a difference of genus between the subject of the subordinate sciences and that of the dominating science and yet at the same time an essential similarity of purpose, and (b) that the process of demonstration should pass from the domina-ing to the lower sciences. Natural Science, mathematics, and metaphysics are, then, subjects in their own rights.

What now can be said of the particular province of metaphysics? We have already seen on page 14 that for Kilwardby metaphysics investigates substances as substances, and that

under substances he includes matter and form, the soul, the heavenly movers and the First Cause. But in Ch. 26, f. 32 c, he announces that accidents too come within the domain of metaphysics, for substance and accidents have common principles; and substance, though it *is* in the strictest sense, is after all only one kind of being. Hence, our philosopher concludes that it is truer to say that the subject of metaphysics is *being* as such and not merely substance as such—a conclusion which he finds supported by the variety of topics raised by Aristotle in Books, 4, 6, 7, 9-11 of the *Metaphysics.*

The foregoing account of the gist of Kilwardby's exposition of the sphere of metaphysics shows that on the whole he adheres fairly closely to Aristotle. In a much later passage (f. 64 b of Ch. 64) we find a hopeful reference to metaphysics as a consummation of all the sciences, but the context makes it obvious that at most this can only be understood to mean that, in addition to being as such, the presuppositions and assumptions of the sciences in general fall within the survey of metaphysics. This, in my opinion, should have been extended to include the different categories required by the different sciences, the presuppositions of common sense knowledge, and the relation between those sciences which study the objective side of thought and those which study the subjective side. Finally, since the end of a thing elucidates its real character, our author would have done well to add that metaphysics knows no ulterior practical end, barring the indirect service to all departments of human thinking; it is knowing for knowing's sake.

The Practical Sciences

From the speculative sciences Kilwardby distinguishes those sciences devoted to human things, grouping them into the practical sciences and word-science. Following the order in the *De Ortu Scientiarum,* we shall consider the practical sciences first.

In using the term 'practical' our philosopher does not mean to suggest that the sciences to which it applies, i. e., ethics and mechanics, are merely practical, for in that case they could not be included in a discussion of the divisions of philosophy. His intention is that they are eminently practical and at the same time include theoretical aspects. Thus, in Ch. 42, f. 43 c, he writes: "*Dicendum quod omnis operativa sciencia habet aliquid de contemplacione et e converso . . . se tamen bene distinguuntur penes contemplacionem et operacionem tamquam penes fines principaliter intentos. Unde dicit Aristoteles in 2° Metaphisice quod finis sciencie speculative est veritas et finis sciencie operative est actio. Operantes enim licet considerant in eo quod agunt, tamen non perscrutantur de causa propter seipsam se respectu eius quod agunt.*" Incidentally, the quotation further shows that the speculative sciences are not exclusively theoretical but possess also practical aspects. Both of these contentions seem indisputable, for in the first place all doing and change involve the realization of an idea; and in the second all theoretical activity, as Bradley in his *Principles of Logic* (Oxford, 1922, Vol. II, p. 714) points out, involves a result that is made and done at least in my existence.

Since, then, the practical sciences, with which we are at present concerned, cannot be distinguished from the speculative sciences by supposing them to be devoid of all theory, how are they to be distinguished? Kilwardby thinks by the ends which they pursue; for whereas the speculative sciences aim at truth, the practical sciences, he tells us in Ch. 35, endeavor to supply the good which man lacks.

Now, the good which we lack may be either spiritual or physical; if it is spiritual, it becomes the concern of that branch of the practical sciences known as ethics; if it is physical, it becomes the object of the mechanical sciences—Ch. 36. Let us consider first Kilwardby's view of ethics.

From what has been indicated already we shall probably

have anticipated Kilwardby's utilitarian attitude toward this science. Ethics, for him, is concerned not with the principles which moral action exhibits or with its ideals and motives, but with the actual practice of the virtuous or good life which has been found to be indispensable for that true happiness or beatitude which all men naturally desire. Hence, in Ch. 36, f. 41 a, he refers to ethics as that "*pars philosophie operativa ad hominis perfectionem per virtutem et beatitudinem.*" He adds in Ch. 36, f. 63 d, that because ethics concerns the good life and our attitude toward God, Who is the Final End of all knowledge, it should be taught early in the life of the individual, and in Ch. 64, f. 64 a, that it indirectly contributes to the other departments of knowledge, for those who live virtuously without the distraction of concupiscence approach nearer to the true Light that enlighteneth every man coming into the world. Kilwardby ends on f. 40 d of Ch. 36 his brief account of ethics with the announcement, derived from Isidore and Hugh of St. Victor, that if the virtue inculcated applies to life as lived in a city or state, it falls within the domain of political ethics; if to life as lived in a family or community, it comes under economic or domestic ethics; and if to the life of any one individual taken as a whole, it is the concern of, what he calls, monastic or solitary ethics.

Mechanics, the second sub-division of practical science, is defined in Ch. 37, f. 41 b, as "*pars philosophiae operativa in rebus humanis corporalibus humanum subsidium ex parte corporis intendens*", and is said to have arisen because of our solicitation for the needs of the body, needs for which nature has not provided as in the case of plants and animals because man has been given his reason to apply to the clothing, feeding, housing, and defending of himself.

Of the practical arts included under mechanics as being concerned with man's physical good some, e. g., earth culture, victualling, and medicine, contribute to the satisfaction of the

intrinsic needs of the body, while the others, e. g., clothing, armoring, architecture, and commerce, minister to the extrinsic needs of the body. Into the respective territories of each of these arts Kilwardby does not wander but contents himself with pointing out in Ch. 40 the superiority of his own sevenfold enumeration over that of Hugh of St. Victor, which he gives in detail in Ch. 39. The main differences between the two classifications seem to be: (1) that Hugo's seventh art, namely, theatrical art which for him embraces dances, games, wrestling, boxing, circuses, etc., is dismissed by Kilwardby as being indecent and cruel, and therefore unfit for Christians. (Cr. p. 27 infra.); and (2) architecture is added to the three arts of wool-working, armoring, and navigation which Hugh considered sufficient for the external economy of the body. Incidentally, our Dominican takes exception to certain features in the terminology of Hugo and suggests that 'clothing art' is more comprehensive than 'wool-working', 'commerce' than 'navigation', 'earth-culture' than 'agriculture', the 'victualler's art' than 'venatio'.

Kilwardby's discussion of the mechanical arts is very general because he has adopted the attitude that they are primarily the concern of manual workers and the common people (Ch. 38, f. 41 b; Ch. 40, f. 42 c). Its most salient feature seems to be the underlying assumption that nature exists for the satisfaction of our physical needs and will readily prove amenable to that use, if the right methods are employed. To our modern minds such an assumption appears strange, because for us, with our problems of over-population and of economic and industrial security, the technical arts have come to be regarded as instruments for coping with nature rather than for using her. We are becoming more and more conscious of the fact that, though we are absolutely dependent upon Nature, we have at the same time come to be in perpetual opposition to her. Such an opposition, unknown in Kilwardby's day, came to birth with

the geographical, scientific, and technical discoveries of the fifteenth and sixteenth centuries, and to prominence in the industrial period of the nineteenth century.

Word-Science

We come now to the second of the sciences concerned with human things, namely, word-science (*sermocinalis scientia*), which is described at the end of Ch. 46 as that "*pars philosophiae de sermone docens recte loqui, scribere et ratiocinari; et haec communi nomina logica dicitur.*" This science, though originating more recently than the other sciences in the history of the human race, and certainly long after men spoke, wrote, and reasoned, is the most basic of all the sciences, for in virtue of it the individual passes from that state of varying opinions and confusion coincident with use or practice to the true arts and sciences with their exact reasoning—fol. 45 c-d; and this being the end of *scientia sermocinalis* Kilwardby asserts that it should be taught before all other subjects.

Before passing on to the consideration of the sub-divisions of word-science, I should like to call attention to the implication in the above paragraph that *scientia sermoncinalis* is a substantive part of philosophy and not merely, as Aristotle supposed, an instrument of philosophical investigation. The implication appears in an explicit form in Ch. 62 where Kilwardby contends that, though word-science has theoretical and practical aspects, and though it serves the speculative and practical sciences, it is not a sub-division of these two groups, for its subject-matter is neither the truth of things nor the good of human operations, but signs or words. A similar attitude is maintained in Ch. 58 of the *De Ortu* where word-science, or at least logic in the strict sense of the term, is said to consider, like the other sciences, a particular kind of being, and a kind which is not merely psychical but which stands in essential relation to physical being. Such an attitude, which incidentally is very

different from that of Albert the Great and many others for whom the subject of logic is *intentiones secundae* as contrasted with *ens* and *pars,* seems to offer an explanation of why Kilwardby has not characterized word-science as a study of thinking and thereby set it over against other sciences as studies of things.

We pass now to Kilwardby's brief account of the first subdivision of word-science. His theory in Ch. 51 that grammar or the science of language originated in the desire to eliminate irregularities, imperfections and failures in the use of language is one that most moderns would accept, especially those who hold that the original object of speech is the conveying of one's meaning to, and the imposing of one's will upon, another person; but his contention that the end of grammar is the fitting expression of our mental concepts is one that only *some* moderns would adopt, the others regarding the inadequacies and vagaries of language as irremediable. Of the 'some' moderns there are two schools: (a) the extremists who advocate an exemplary universal language by means of which our knowledge and wisdom can be conveyed to others and practical communications facilitated, and (b) the moderate school which regards grammar as assisting us to convey our practical directions, thoughts, and theories, but not as the only method of expressing ourselves. With this latter school Kilwardby would have been more in sympathy for, in the first place, in Chapter 47 he realizes that language is a living organic entity that cannot be restricted and dominated by prescribed forms and he also sees that we express ourselves not only by speech but by gesture and, it might have been added, by customs and beliefs; in the second place, Kilwardby says nothing of a universal, international, and model language though it might well have occurred to him that for practical and scientific matters in which idioms are less significant the Latin of his day was admirably suited. Incidentally, we may observe that neither he nor any of his

contemporaries seems to have anticipated the nineteenth century notion of an *Ursprache*—a not unlikely feat in view of their intimate acquaintance with the Biblical account of the confusion of tongues.

Kilwardby mentions voice, letters, and syllables as coming within the scope of grammar (Ch. 52), but he does not investigate them because for him the essential nature of speech and language is expression of thought and grammar cannot be adequately defined, as Gundissalinus supposed (in his *De Div. Phil,* ed. L. Baur, Muenster, 1903, p. 44) as the art of right speaking and writing. With the physiological side of language, which exists because speech brings into activity several organs of the body, or with the social aspect, which arises because speech presupposes a felt need of communication, Kilwardby does not concern himself.

From Kilwardby's view of grammar,[8] as the science that

[8] H. Denifle prints in his *Chart. Univ. Paris* (1889, t. I, p. 558) the errors in grammar and logic that were condemned by Kilwardby at Oxford on March 18, 1277. They are:

In *Grammaticalibus*—(1) Ego currit, tu currit, currit et curro eque sunt perfecte et congrue orationes. Similiter currens est ego.

(2) Item Socratis legere, Socrati legere sicut Socratem legere.

(3) Item quod verbum manens verbum potest privari omnibus accidentibus.

(4) Item quod nullum nomen est tertie persone.

In *Logicalibus*—(1) Quod contraria simul possunt esse vera in aliqua materia.

(2) Item quod sillogismus peccans in materia non est sillogismus.

(3) Item quod non est suppositio in propositione magis pro supposito quam pro significato, et ideo idem est dicere, cujuslibet hominis asinus currit, et asinus cujuslibet hominis currit.

(4) Item quod animal est omnis homo.

(5) Item quod signum non distribuit subjectum in comparatione ad predicatum.

(6) Item quod veritas cum necessitate tantum est cum constancia subjecti.

(7) Item quod non est ponere demonstracionem sine rebus entibus.

(8) Item quod omnis propositio de futuro vera est necessaria.

(9) Item quod terminus cum verbo de presenti distibuitur pro omnibus differentiis temporum.

(10) Item quod ex negativa de predicato finito sequitur affirmitiva de predicato infinito sine constancia subjecti.

treats of thought as expressed in particular linguistic modes, we might have expected him to regard logic as treating of thought quite generally and in abstraction from such modes, and perhaps to define it as the search for the general principles, mental forms, and processes, exhibited by rational thinking, whether scientific or not; but Kilwardby seems less concerned with the nature of rational thinking than with the importance of thinking soundly. Thus, in the opening paragraphs of Ch. 53 he tells us that logic came into existence because unskilled reasoning gave rise to contradictory opinions and many errors, and thereby imperilled the certainty of scientific knowledge, and later (fol. 51 b) that logic teaches us how to arrive at truth in the sciences, and finally on fol. 53 b, he defines logic as "*scientia de raciocinacione docens modum investigandi veritatem ignotam circa thesim vel circa questionem philosophicam.*"

For the ordering of unskilled and contradictory reasoning and for the acquiring of certainty in scientific knowledge, Kilwardby regards the syllogism as the chief instrument, defining it on fol. 50 d, after the fashion of Aristotle, as "*oratio in qua ex quibusdam positis, ex necessitate sequitur conclusio.*" The syllogism, he tells us, may be either demonstrative or dialectical, the former being, as Aristotle in his *An. Post.* says, based on essential properties (*propria*), and resulting in certain knowledge in a particular science; the latter, as that same author in the *Topics* observes, starting from probable principles that are common to the sciences and issuing only in opinions or beliefs that hold good for any of the sciences (fols. 51 b and 56 d, seq.). Fundamentally syllogistic are also those forms of argument which, according to Aristotle, are known as induction, example, enthymeme and reduction.

The foregoing views on the syllogism, together with others, are worked out at great length in Kilwardby's commentaries on the two *Analytics,* but a mere skimming of these numerous folios gives the impression that our philosopher makes no ap-

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The foregoing views on the syllogism, together with others, are worked out at great length in Kilwardby's commentaries on the two *Analytics,* but a mere skimming of these numerous folios gives the impression that our philosopher makes no ap-

preciable advance on the teaching of Aristotle and that he is guilty of many of the same defects, such as the assumptions that the syllogism is the type of all reflective thinking and not merely one frequently occurring form of reasoning and that the propositions in the syllogism must always be categorical, and the reduction of the second and third figures to the first which alone is regarded as self-evident. Obviously, it is only fair to point out that the similarity between Aristotle and Kilwardby involves a common share in the advantages of the traditional syllogistic teaching which has been well summarized by W. E. Johnson in his *Logic* (Pt. II, p. 102): "Syllogism is practically important because it represents the form in which persons unschooled in logical technique are continually arguing. It is theoretically important because it exhibits in their simplest guise the fundamental principles which underlie all demonstration, whether deductive or inductive. It is educationally important because the establishment of its valid moods and the systematization and co-ordination of its rules afford an exercise of thought not inferior and in some respects superior to that afforded by elementary mathematics."

For Kilwardby, logic has to consider not only the ratiocination that falls within the provinces of demonstration and dialectic, but also that which is displayed in sophistics, a form of reasoning purporting to give us knowledge about being, though actually it leads us away from truth (Chs. 56 and 58). But more especially, logic has to concern itself with the art of dividing and defining, for in its progress from the known to the unknown it encounters not only "things in combination" but "things without combination", i. e., logic has to deal not only with syllogisms or propositions but also with concepts (Ch. 54). This art, though recognized to some extent by Aristotle,[9] was pushed into the background by him because of his

[9] Cf. *An. Post.* II, c. 13, esp. 96 b 15, seq.

preoccupation with the essential nature of logic, and so, says our Dominican, it was left for Boethius to devote separate treatises to these subjects.

It may here be observed in passing that this branch of logic which is concerned with division and definition seems to have first received adequate recognition from the Arabians, if we can believe the statement of Albert the Great in *De Praedicab.* (I, 5): *"Divisio autem logicae et quae sunt partes ipsius, ut dicunt Avicenna et Alfarabius, accipienda sunt ex intentione ipsius. . . . Logica intendit docere principia, per quae per id, quod notum est, deveniri potest in cognitionem ignoti; est autem aut incomplexum, de quo quaeritur, quid sit, aut complexum de quo quaeritur, an verum vel falsum sit . . . Istae ergo sunt duae partes logicae; una quidem, ut doceantur principia, per quae sciatur diffinitio rei et quidditas; . . . altera vero, ut doceantur principia, qualiter per argumentationem probetur orationis veritas vel falsitas. . . . Sed prima harum partium vel ab antiquis non tradita est, vel ad nos non pervenit; hanc etiam partem dicunt Avicenna et Alfarabius ad Arabes non pervenisse."*

The last significant question on logic which presents itself in the *De Ortu Scientiarum* concerns the nature of that science. Having taken over Aristotle's symbolic treatment of the syllogism and having thereby emphasized form, Kilwardby naturally expresses the view that logic is formal. *"Item quia iste differencie raciocinacionum ex propriis et ex communibus sumuntur ex parte materiae, quia ex parte rerum et mediorum unde raciocinantur et forma raciocinacionis eadem est in omni materia, ideo oportuit logicam facere tractatum de modo raciocinandi in genere prout abstrahit ab omni materia propria vel communi, ad quam videlicet respiceret tam demonstratur quam dialectus raciocinari volens; eadem enim est forma sillogistica in utraque materia, scilicet necessaria et probabili. . . . Habet tamen secum quamdam materiam simpliciorem que est intra*

utramque dictam, scilicet tres terminos, duo extreme et medium unum ex quibus connectuntur due proposiciones" (Ch. 53, f. 51 b-c).

However, on fol. 58 b of his fifty-eighth chapter, Kilwardby seems to approach metaphysical logic with its insistence upon the relation of the knowing mind to what is known when, by way of commenting on Met. 1004 b 16, seq., he writes: *"Est et sermoncinalis quia agit de racioncinacione per sermonem expressa et non solum in mente latente. Unde bene dicitur esse de sermone raciocinativo vel de raciocinacione sermocinata. Est et de ente simpliciter sive de omnibus in genere sicut metaphisica quia non docet raciocinari figmentaliter set per comparacionem ad id quod in rebus invenitur de esse et non esse ut per id quod de rebus notum est veniatur ad id quod ignotum est, et hoc facit indifferenter in omnibus rebus per condiciones entis generales que consequuntur ens secundum quod ens est super quas discurrit sua consideracio conponens et dividens ut iam ostensum est. Sic igitur manifestum est quod logice subiectum uno modo dicitur raciocinacio, alio modo sermo raciocinativus, tercio modo ens simpliciter racioncinabile vel omnia in genere, sermone racioncinativo ad invicem collata et hec omnia tria in idem redeunt quia unumquodque eorum secum alia duo portat et sine illis non est."*

Similarly, the doctrine that logic is more than a formal science is implied on fol. 58 d, where Kilwardby maintains that it is one of the sciences consummated by metaphysics: *"Cum enim raciocinacio et sermo ractiocinativus sit aliquod ens, de ipso secundum quod ens est habet considerare primus philosophus, quia eius est considerare omne ens secundum quod ens, scilicet non solum ens completum set et ens diminutum et hoc duplex, ut docet Aristoteles in fine sexti metaphyisice* (VI, c. 4), *scilicet ens casuale et verum quod est in anima tantum et ita metaphyisica est communis logice."*

The third member of the trivium, rhetoric, is distinguished

in Ch. 61 from logic on the grounds that it endeavors to persuade us to believe conclusions which cannot be adequately demonstrated, while logic seeks by reasoning to convince us of necessary and certain judgments, and also by its use of enthymemes rather than the true syllogistic forms of logic. It is further distinguished from that branch of logic called demonstration mainly by its characteristics of arguing from probabilities and conjecture rather than necessary causes or effects, and from the branch called dialectics because it considers a hypothesis and not a thesis and because it aims at justice, usefulness, and honesty, rather than an opinion which is merely a preparation for scientific certainty.

We should naturally expect the next chapter of the *De Ortu Scientiarum* to be allotted to poetics because the practice of tacking on poetics to the *Organon* had been well established by the Arabians, especially Averroës. Such a chapter, however, is entirely lacking in Kilwardby who seems to be strangely devoid of interest in those imaginative processes of mankind which are not thinking in the strictest sense of the term. Of the arts included by Aristotle under poetics music receives, as we have already seen (p. 11), some attention but only as a branch of mathematics; poetry is summarily dismissed on f. 50 d of Chapter 52, with the observation that in so far as it contains a meaning it is the concern of grammar, and in so far as it is metrical it is a sub-division of music; while drama and allied theatrical arts are condemned (with an appeal in Ch. 40, f. 42 a, to the authority of Isidore's *Etymol.* c. 60 [P. L. 82 : 660 c]) as a serving of the devil and his works and as being, therefore, not eligible for inclusion in a scheme of the philosophical sciences. It may be suggested in passing that Kilwardby's underestimation of the function of imagination in human activity is also responsible for his failure to discuss the plastic arts.

Final Sections of the "De Ortu Scientiarum"

Before dealing with the final chapters of the *De Ortu,* in which the interdependence of the sciences is discussed, it might be well to point out here two further outstanding lacunae in Kilwardby's enumeration of the divisions of secular knowledge: these are the sciences of psychology and history. Apropos of psychology, it will be remembered that in contrasting metaphysics and natural science (cf. p. 14), Kilwardby allows that the soul *as* substance comes within the scope of metaphysics and *as* the principle of movement within the domain of natural science; but the soul *as* knower, *as* the subject in which adheres all the branches of knowledge which have been enumerated, is entirely ignored by him; so, too, the nature of rational thinking is neglected, though naturally the pages on logic cover the nature of sound thinking. These omissions are particularly strange in view of Kilwardby's apparent familiarity with the psychological treatises of Aristotle.

The failure to consider history as a separate science was, of course, a common defect of all mediaeval classifications, though why this should have been is difficult to understand considering that historians had existed from classical times and chroniclers abounded in the Middle Ages. Perhaps the neglect is to be ascribed to the fact that history in this period amounted to little more than a recording of "facts" (whatever this word may mean) padded out by contributions from the imagination, for surely if there had existed in those days, as there has from the time of Vico, a philosophy of history occupying itself with the problem of the nature of history, this subject would have found a place in our Dominican's classification of knowledge. A casual remark in Ch. 63, f. 62 b, to the effect that a history of the (natural) sciences serves rather as a satisfaction of our curiosity than as something useful suggests that Kilwardby, if pressed, would have recognized that any study of how the

present came to be what it is presupposes a definite intellectual interest, and that consequently history is a definite department of knowledge. We must, therefore, conclude our survey of Kilwardby's enumeration of the sciences with the regret that an account of aesthetics, psychology, and history was not added to that of the speculative sciences and of the arts of living, thinking, and speaking.

The *De Ortu Scientiarum* ends, if we ignore the chapter on magic—a subject not to be classified under philosophy because it is the mistress of all iniquity—with a consideration in Chapters 62-66 of the mutual usefulness of the sciences, and indication of the methods that are common to them, and an outline of the various arrangements possible if we compare them with reference to (1) the order of their discovery; (2) the nature of their aims; (3) their likelihood of attaining certainty, and (4) the order in which they should be taught. Since the question of the mutual usefulness and the methods of the different departments of knowledge have constantly recurred throughout the *De Ortu,* it will not be necessary here to do more than outline Kilwardby's views on the various possible arrangements of these departments.

With reference to the order of their discovery Kilwardby declares in Ch. 63, f. 62 b, that they should be arranged thus: (1) mechanical sciences because man is conscious of his bodily needs before all others; (2) speculative sciences beginning with physics because it concerns the things nearest the senses, then mathematics, and metaphysics; (3) ethics; (4) word-science in the order of grammar, rhetoric and logic. If the nature of their aims is to be the criterion, the sciences will be headed by ethics, because it approaches nearest to the spiritual good; and ethics will be succeeded by the speculative sciences, word-science, and mechanics. Arranged according to their likelihood of attaining certainty, the sciences will fall into this order: logic (the sub-division of rhetoric being omitted); the specula-

tive sciences, metaphysics taking precedence over mathematics and physics; ethics; and mechanics. Finally, the order in which they should be taught is given as: word-science, beginning with grammar and going on to logic; ethics; and then either mechanics, if the pupil has no great capacity for learning, or metaphysics, if intellect is his outstanding faculty. If mechanics is taught first, it should be followed by either mathematics and physics or by metaphysics, according to whether imagination or intellect predominates in the pupil. If metaphysics is taught first, the succession should be mathematics, physics, and then mechanics.

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SPONTANEITY AND MONSTROSITY IN ARISTOTLE

ALTHOUGH Aristotle's interest in discussing irregularities in natural law lay more within the sphere of human conduct, a fact which leads even in the *Physics* to an emphasis on luck rather than spontaneity,[1] nevertheless he also had in mind certain exceptions to the laws which govern animals, plants, and inanimate objects. The question this article seeks to answer is, Are monstrosities spontaneous events? Those who have put this question explicitly seem to be unanimously of the affirmative opinion.[2]

In antiquity Alexander Aphrodisias unequivocally calls monstrosities examples of spontaneity.[3] And perhaps the best modern expression of this opinion is that of Torstrik whose commentary on Aristotle's *Physics,* II 4-6, is indispensable for any study of spontaneity. Because he clearly states the position and because it will be necessary again to refer to his argument, it seems best to quote the paragraph in full.[4]

"Ferner ist 197 b 33 mit E, Simplicius und Philoponus *χωριζόμενον τοῦ ἀπὸ τύχης* zu lesen. Subject ist das *αὐτόματον* im engeren Sinne. Uebrigens ist diese Behauptung nicht ohne Schwierigkeit. In den von Aristoteles angefuehrten Beispielen von dem Pferde und dem herabfallenden Stein handelt es sich um Naturvorgaenge welche nur in Beziehung auf menschliche Wuenche *ἀπὸ ταὐτομάτου* waren, und auch sonst giebt es davon bei Aristoteles Beispiel genug, vid. Bon. Ind. s. v. *αὐτόματος*:

[1] It is unfortunate that the Oxford translation does not use 'luck' for *τύχη*, because the two are more nearly colloquial parallels. For example, in English we say 'good luck' but not 'good chance'.

[2] Robin L., *La Pensée Grecque*, p. 349; Hamelin O., *Système d'Aristote*, p. 267; Werner—*Aristote et l'Idéalisme Platonicien*, p. 115, "La nécessité matérielle n'est autre que le hasard" and p. 116, n. 3, and p. 117, n. 1,—seem to imply as much without explicitly making the affirmation. I have not found any definite statement in Zeller.

[3] *De anima, liber alter, περὶ τύχης*, Bruns, p. 178, 25-26.

[4] *Hermes* (1875), p. 465.

hier sehen wir dass dasselbe gilt in Beziehung auf das εἶδος den Zweck der Natur. Danach ist also die generatio aequivoca auszuschliessen, trotz ihres Names, αὐτόματος γένεσις, denn hier wird der Naturzweck erreicht ohne Nebenfolgen, auch geschieht sie bei gewissen Arten der Thiere und Pflanzen regelmaessig. Es bleiben also nur die τέρατα uebrig, denn diese sind παρὰ φύσιν 770 b 5, 9, und sie sind ἁμαρτήματα τοῦ ἕνεκά του: die Natur will etwas erreichen und waehrend sie dies verfehlt, entsteht etwas anderes. Themistius ist zwar hiemit nicht einverstanden, [Sp.] 187, 22. οἷον τὸν ἑξαδάκτυλον ἢ στρουθοκέφαλον. ἢ ταῦτα οὐκ ἔστιν ἀπὸ ταὐτομάτου; ἔχει γὰρ οἰκείαν αἰτίαν τὴν προϋπάρχουσαν ἐν αὐταῖς· ἢ γὰρ ψύξιν ἢ ἔλλειψιν ἢ πλεονασμὸν τῆς ὕλης. Aber diese Dinge sind nicht οἰκεῖαι αἰτίαι sondern stoeren vielmehr die nach dem Zweck wirkende Ursache, und das bewirkt die Missgeburt."

Torstrik has argued well. But it is seen that there is not absolute unanimity. Even if Themistius' reasons appear poor at first glance, at least one commentator denies that monstrosities are spontaneous events. The trend of this article will be to produce reasons supporting Themistius' viewpoint; it will certainly be difficult, perhaps impossible to overthrow the prevailing theory, but the literature does not appear to have done justice to a position which, to say no more, deserves explicit refutation.

Before one can decide whether a monstrosity occurs spontaneously, it is necessary to understand what spontaneity is. This unfortunately leads to a long digression, but a digression which is interesting for its own sake and which because of the apparent confusion in Aristotle's thought can stand independent treatment. Torstrik, in spite of rather than because of his love of conjectural emendation, has cleared up some difficult points. And Hamelin in his commentary, *Aristote, Physique II,* has done excellent work in criticizing the ancient commentators. But still several things remain to be said.

Spontaneity, for others as well as for Aristotle, designates

some sort of irregularity in the laws of nature. Obviously then, a theory of the spontaneous derives its peculiarities from the underlying world view. And it is precisely in this relation that Aristotle introduces his chapters on the subject. As Torstrik has well said, Aristotle asks himself the question, what sort of a cause is spontaneity? This point needs emphasis when the subject is monstrosity because we are to view spontaneity from a different angle from that of Aristotle. Our final interest lies in the event due to spontaneity rather than in spontaneity regarded as a cause. The need of such a distinction is obvious from the text of the *Physics.* We cannot here discuss Aristotle's views on nature in general. *Physics,* II 1-3, requires separate study. But briefly there are for Aristotle no more than four components in a complete explanation of a given event. Mathematical formulae which dominate modern science get scarce attention from him. Hence causality for him is entirely different from what a contemporary philosopher might mean by the term. We are accustomed to consider causality as working from the past to the future; but because three of Aristotle's four causes are but varying aspects of one thing, purpose, and this is the most important part of causality, we must think of Aristotle's cause as working from the future to the present or past. The purposes or ends so direct processes that they occur either always in the same manner or with but slight variations. All natural law is of this type and an event is explained when its purpose is known. For example, if the life cycle of a plant is to be explained we must know that the plant has developed from a seed which was produced by another plant of the same species, and that its various present activities are for the purpose of producing another mature plant similar to the parent. When the new plant has reached maturity, the end of its growing process, we have the form of that species embodied in the matter before us.

That Aristotle's causality works backwards, so to speak, must

always be borne in mind because irrelevant objections are occasionally based on some other, more modern, conception of cause.[5] Perhaps Aristotle made causality work backwards because he anticipated Hume in rejecting a cause which by some inner force produced a given effect with unfailing regularity. And if in physical experimentation the sources of constant error be infinite in number, an analogy may be drawn between Aristotle and others later than Hume who deny the sufficiency of any observable causes.

However, assuming Aristotle's views on nature, spontaneity is in some way an exception to them. Since everyday speech contains many references to chance and luck, there must be some vague meaning corresponding. The philosopher is obliged to make this meaning more precise. This may result in denying any scientific import to chance and luck on the assumption that common language uses the terms merely to cover common ignorance. It has been suggested, therefore, that however much Aristotle may talk about spontaneity and luck, there is really no absolute indeterminism in his system. If spontaneity is, as we shall see, an accidental cause, there must always be, so Alexander Aphrodisias argues, a per se cause for the accident to attach to. The reason a white man built a house is that a Caucasian was born according to biological laws and by a determinate education became an architect. Or it may be said that spontaneity is merely the point of intersection of two relatively independent lines of causation.[6] This view gains plausibility

[5] E. g., D. D. Heath, "Misconceptions of Aristotle's Doctrine," *Journal of Philology* (Vol. VII), points out such in Mill and Grote, but is himself, as I conceive, somewhat in the same fault.

[6] Zeller, 3rd ed. II 2, p. 335, n. 3. "Verwandter Art, aber fuer die gegenwaertige Untersuchung unerheblich, ist das zeitliche Zusammentreffen zweier Begebenheiten, zwischen denen gar kein ursaechlicher Zusammenhang stattfindet, wie etwa eines Spaziergangs und einer Mondsfinsterniss. Ein solches Zusammentreffen (in welchen sich die Natur des Zufaelligen eigentlich am reinsten darstellt) nennt Arist. *σύμπτωμα Divin. p. s.* 1. 462 b 26 ff."

from the passages on luck which do not strictly imply indeterminism.[7] Such passages may at least be partially explained as being intended to refute cruder forms of determinism. Man is, of course, not an atom nor a mechanical aggregation of them, he does not tumble down hill like a stone, nor must he always be pushed in order to go. Thought and bile are not homogeneous. Refutation of the cruder views still leaves room for the more profound determinism which takes more careful account of psychological phenomena. But this is far from proving that Aristotle accepted determinism in any form. He is clearly dissatisfied with the explanation which would call luck merely a cover for man's ignorance, though in a sense luck and spontaneity are something unknown[8] or more precisely unknowable. But it seems that the characterization of the Aristotelian system as indeterministic needs little emphasis. As his treatment of propositions referring to the future, as well as his discussion of mechanism shows, the past and the present do not guarantee the future.[9]

Those who hold that monstrosities are the results of spontaneity naturally hold also that all contingency or abnormality falls within the sphere of spontaneity. The thesis here maintained must affirm another kind of irregularity outside that sphere. The first, spontaneity, now stands in need of more precise definition. *Physics,* II 4, may be passed in silence, it is an historical critique. Chapter five begins Aristotle's own explanation, and it opens with a confusion we should like to avoid, because a thorough discussion would carry us far into a detailed explanation of Aristotelian logic. Nevertheless the present subject is so dependent on logic, as Heidel shows,[10]

[7] E. g., *De part. an.*, I 1, 640 a 28-32; *Eth. Eud.*, VII 14, 1247 b 26; 1248 a 30.

[8] 197 a 10.

[9] *De interp.* 9; *Phys.*, II 8, 9.

[10] W. A. Heidel, *The Necessary and the Contingent in the Aristotelian System* (Chicago, 1896).

that one cannot omit all reference to the basic theory. For a discussion of logic more thorough than that of Heidel's article, one may consult the excellent analysis by M. Robin.[11] This eminent French savant has undertaken to show that, and how, there is a constant concordance between the generation of effects by their causes and the generation of conclusions by their middle terms. Now since spontaneity is an accidental cause and accident is an element of logic, there is a strict and definite relationship between logic and this aspect of physics. M. Robin points out that Aristotelian logic is fundamentally a connotative system, not an extensive or nominalistic one. The class is not just the sum of its individuals; it is still an Idea even if dehypostatized. M. Robin goes on to explain that in spite of this fundamental character of Aristotelian logic, many extensive elements crept in until the system loses a great deal of self-consistency. Now *Physics,* II 5, begins apparently with such an extensive element. *ἐπειδὴ ὁρῶμεν τὰ μὲν ἀεὶ ὡσαύτως γιγνόμενα, τὰ δὲ ὡς ἐπὶ πολύ, φανερὸν ὅτι οὐδετέρου τοῦτων αἰτία ἡ τύχη λέγεται.* Natural processes, then, in these lines and those immediately following are divided into two distinct classes, depending on whether they are regular—and this class is sub-divided into 'always' and 'for the most part'—or irregular. The assertion immediately follows that nothing in the first class is spontaneous; the second, called 'neither always nor for the most part', seems, however, to be made definitely co-extensive with the notion of spontaneity.[12]

If this statement of co-extension be taken strictly, then monstrosities fall within the sphere of the spontaneous. Now it is not the desire to force a thesis on Aristotle which leads to discounting his explicit statement. Both Hamelin and Torstrik,

[11] "La conception aristotélicienne de la causalité," *Archiv fuer Geschichte der Philosophie* (1909, 1910). Cf. also L. Brunschvicg, *Qua ratione Ar. metaphysicam vim syllogismo inesse demonstraverit* (thèse, Paris, 1897).

[12] 196 b 15-17. *τά τε γὰρ τοιαῦτα ἀπὸ τύχης καὶ τὰ ἀπὸ τύχης τοιαῦτα ὄντα ἴσμεν.*

who class monstrosities with spontaneous productions, refuse to take these lines seriously. While Torstrik justifies this procedure, arguing that these lines state the genus of the spontaneous event and the following lines give the specific difference, for on no other assumption do they make sense, he nevertheless connects this argument with what I apprehend to be a misunderstanding of the opening paragraph of *Physics*, II 5. Yet since Hamelin is of the same opinion it is evidently a common misunderstanding. It is the view which would make the concept 'irregular', i. e., neither always nor for the most part, identical with the denotative concept of 'rare' or 'seldom'. To quote from Hamelin:[13] *"Cette conception tout extensive paraît bien compter sérieusement dans la pensée d'Aristote, puisque nous le voyons admettre que, s'il n'y a de science au plus haut sens du mot que de l'universel, il y a pourtant aussi une certaine science de ce qui arrive le plus souvent."* And further on,[14] speaking more specifically of the rarity of spontaneous events: *"Remarquons que la caractéristique invoquée par Aristote, et qui relève du point de vue de l'extension, est extrêmement défectueuse. Il se peut qu'un fait de hasard soit, au moins en général, un fait rare. Mais, quoiqu' Aristote en dise, il n'y a pas réciprocité. S'il parvient à dire sur le hasard des choses qui portent, c'est grâce à l'emploi des expressions 'par accident', 'accidentel', auxquelles il donne le sens non pas de rare, mais de contingent."*

To my mind this is multiplying difficulties where enough already exist. It seems strange that neither of these men attempted to understand ἐπὶ τὸ πολύ connotatively, although Torstrik remarks, more significantly than he intended, that Aristotle never uses the phrase τὸ ἐπ' ἔλαττον for the irregular. Yet no phrase would have been more appropriate if τὸ ἐπὶ τὸ πολύ meant 'in the majority of cases'. It ought, then, to be more

[13] *Système d'Aristote*, p. 237; cf. p. 126.
[14] *Ibid.*, p. 227.

reasonable to suppose that Aristotle did not mean rare when he said irregular, i. e., neither always nor for the most part. We need not trace history back to Philoponus to see that rare events are not necessarily spontaneous. A large pearl is rare enough, but the more perfect it is, hence the rarer it is the less is it the result of spontaneity. It is rather an extreme and admirable example of how nature works when unhindered. And conversely, an indication that frequency is insufficient to establish teleology is the occurrence of events, such as stroking the beard while lecturing, which are frequent but not ἐπὶ τὸ πολύ in the strict sense, that is purposive. The strange notion [15] of ἐπὶ τὸ πολύ must then be taken connotatively rather than extensively. It is of course easy, and therefore possibly superficial, to claim that ninety-seven potato eyes grow and produce potatoes while only three die. Such an account requires the extensive and literal interpretation of ἐπὶ τὸ πολύ. Shifting the viewpoint one might retort, however, that nine hundred and ninety-seven fish eggs die for every three which become fish. 'For the most part' may even yet be extensive, but it is no longer literal. In reality we must not let it remain extensive at all. It does not refer to any given percentage of successes or failures; rather it denotes the norm in natural processes. We have just seen that the rare as well as the frequent can be the norm. Now by showing that the frequent as well as the rare can be abnormal, we may conclude that the rare is a concept neither equivalent to nor generic to spontaneity.[16]

This additional evidence in favor of such a connotative interpretation is found in the extremely wide sphere of monstrosities in the strict sense. For whether monstrosities are spontaneous or not, if 'for the most part' is literal or denotative, there will be few exceptions. But there are more exceptions than regulari-

[15] Hamelin, *op. cit.*, p. 126.

[16] To the objection, most fish come from eggs and therefore ἐπὶ τὸ πολύ is extensive, the following paragraph applies.

ties. "Even he who does not resemble his parents is already in a certain sense a monstrosity; for in these cases nature has in a way departed from type. The first departure is indeed that the offspring should become female rather than male." [17] To call monstrous all females and even those males which do not resemble their parents requires, as Aristotle admits in *De gen. an.,* IV 4, 770 b 3-27, by distinguishing material and formal natures and taking notice of regular irregularities, some colloquial modifications. Yet his original position respecting all females and most males at least makes possible the question: Does anything ever occur strictly ὡς ἐπὶ τὸ πολύ? Certainly very few things are strictly such and hence it seems inconsistent with what is characteristic of Aristotle to suppose he understood the regular, the lawful, as an extensive concept.

That Torstrik failed even to refute such an interpretation and apparently held as obvious the extensional position is all the more surprising in view of his keen and humorous penetration of an equally puzzling phrase in 196 b 18.[18]

The next step, then, is to determine the specific difference which narrows the irregular, in the sense of abnormal, to the sphere of spontaneity and see if we have included or excluded monstrosities. No reasonable doubt can obscure this characteristic. It is simply τὸ ἕνεκά του.[19] In other words, if there are two kinds of abnormal processes, that one only which is a means to an end is the result of spontaneity. Of course ends as well as processes may come from luck or spontaneity,[20] but it is interesting to note, as Torstrik has pointed out, that Aristotle in chapters five and six, contrary to superficial—if not modern—views, is thinking primarily of spontaneous processes. Hence

[17] *De an. gen.,* IV 2, 767 b 4-8, Oxford translation.

[18] *Op. cit.,* p. 441.

[19] This is amply stated in 196 b 20, 21; 23, 24, understanding τὰ δὴ τοιαῦτα as referring to ἕνεκά του of line 21; 29-31; 33.

[20] 199 b 19-22.

the phraseology of his illustrations may at first seem a little peculiar.[21] The explanation is that Aristotle is treating spontaneity as a cause, and naturally enough as a cause of processes. To speak accurately an abnormal or unnatural form is a contradiction in terms. Therefore an end is a spontaneous event only when it results from a spontaneous process, and such a process is, we argue, one which is both abnormal and purposive. This slight confusion between end and means does not, however, affect the fundamental nature of the problem. To the one question, is monstrosity a spontaneous event? we merely substitute another, is the monstrosity the result of a spontaneous process?

One must answer negatively because the process resulting in a monstrosity is not a means. It may have begun as a means and the animal may have developed normally for a time, but then something interfered and the continuity of the process was destroyed. And if the continuity has been broken, the process strictly no longer exists, or at least the end of which the means was the means failed of realization. But if the means is the means of an end, and if the monstrosity is not the end,[22] neither is the monstrosity the result of spontaneity.

What first strikes one's attention with regard to this problem is the fact that Aristotle never uses a monstrosity as an example of a spontaneous fact. Indeed, with the exception of a very few obscure passages, he seems never to hint at such a notion. This argument from silence must be accorded some psychological weight in the final conclusion, especially since he does not leave us without any indication of what he has in mind. But before bringing forward such indications, there is one

[21] 196 b 33. It is the going to market instead of recovering the money which occurs by chance. Similarly 197 b 15, 16.

[22] *De an. gen.*, II 3, 736 b 3: *ὕστερον γὰρ γίνεται τὸ τέλος, τὸ δ'ἴδιόν ἐστι τὸ ἑκάστου τῆς γενέσεως τέλος. De part. an.*, I 1, 641 b 23 sqq. *πανταχοῦ δὲ λέγομεν τόδε τοῦδε ἕνεκα, ὅπου ἂν φαίνηται τέλος τι . . . μηδενὸς ἐμποδίζοντος.* And the context.

more indirect argument against monstrosities being spontaneous.

In the *Physics,* as has been remarked, Aristotle's interest centers in human moral activity. We may disregard his illustrations, because, while all of them—including the saved horse and the falling stool which are classed as spontaneous as well as the lucky event of obtaining the money—have as a result a good and not an evil which would be the analogue of a monstrosity, this, if there were nothing further on which to base an argument, could be regarded as a chance coincidence. But there is something further.

The definition of luck requires that the effect of luck be τῶν προαιρετῶν.[23] This phrase, it appears, should be translated 'of things which might be chosen'. Now obviously it is possible to choose something evil, and because of such a possibility Torstrik has adopted the view here rejected.[24] The position of this paper also assumes that Aristotle asked himself the question about going into the forest to chop wood and being beaten by robbers. But it holds further, contrary to Torstrik, that such an event does not fall within the sphere of luck. Naturally enough we and, Aristotle too, call such a case unlucky, but such phrases [25] are to be regarded as concessions to popular usage and it is well known that Aristotle made concessions of that kind. But his theory would require the event in question to be called not so much 'unlucky' as simply 'no luck at all'. And this too is popular usage. Now, then, to resume, while it is possible to choose something that turns out evil, Aristotle holds that one always chooses the apparent good. Is it too much to say, then, that nature never makes a mistake in her choosing, or more strictly, her desiring of ends? Monstrosities are imperfections and privations; nature is never directed toward them. To put it plainly, the spontaneous event is the good result which occurs

[23] 197 b 20. Cf. 198 a 5-7. [24] *Op. cit.*, p. 446. [25] E. g., 197 a 27.

without the normal means; the monstrosity arises from a normal means which, by frustration, never attains its end.[26]

Now we may mention what Aristotle would consider a spontaneous event. The most usual illustration is health.[27] The reference to art in these passages again suggests that only the form or good result can possibly be the result of spontaneity; for art never chooses the worse.

Further it seems desirable to hold, against Torstrik again, that the results of spontaneous generation do not belie their name. The reasons contra[28] are certainly superficial, for whether the original purpose of going to market is obtained or not, " ohne Nebenfolgen," listening to Socrates for example, the obtaining of the money is still lucky. With reference to spontaneous generation, therefore, we must determine if the animal so generated could have been produced by normal means, for if this be not true, the animal cannot be the result of spontaneity.[29] In one specific instance this question cannot be clearly answered. For although in one place[30] it appears that Aristotle leaves open the possibility that some testacea, particularly snails, may originate through ordinary methods, later he apparently decides that all testacea are spontaneously generated.[31] If this were the only and final word, it would be impossible to hold that testacea are spontaneous productions in the strict sense of spontaneity. But in another work he clarifies the situation by a categorical statement, though he does not

[26] *Meta.*, Λ 3, 1070 a 6-8 seems to mean that in spontaneity it is the efficient cause and not the final cause which is lacking. W. D. Ross, *Aristotle's Metaphysics*, Vol. II, p. 355 on the words *αἱ δὲ λοιπαὶ αἰτίαι* of 1070 a 9 seems, so far as a hint can show, to be in some agreement with the general position of this paper.

[27] *De part. an.*, I 1, 640 a 27-29; *Meta.*, Z 9, 1034 a 9-21.

[28] Torstrik, *op. cit.*, p. 465. Ross, *op. cit.*, p. 183, again is inclined in favor of the present thesis.

[29] According to the argument *τῶν προαιρετῶν* above.

[30] *De an. gen.*, III 11, 762 a 2, 33.

[31] *Ibid.*, II 3, 736 a 26.

give specific examples. Some things, he holds,[32] may be produced either from seed or without seed. That this does not refer to slips of plants and the like, but to spontaneous generation is clear from the context.

We hope that this is a sufficient proof that forms, such as health and perfect animals, are the only possible effects of spontaneity and that monstrosities in particular are not such. It remains in fairness to point out whatever difficulties attach to this view, because, as we saw, even ancient commentators took the opposite position. This very fact is in itself a difficulty, for while, as this paper may unfortunately become evidence, commentators misunderstand their texts, the explanations of a student like Alexander Aphrodisias are not lightly to be disregarded. Simplicius too gives an illustration, which, though not referring to monstrosities, has as the spontaneous event something evil or unfortunate. And if the Eudemus from whom Simplicius got the story be the faithful disciple of Aristotle, the opposition can boast an exceedingly dangerous antiquity.[33]

If, however, the commentators have misunderstood Aristotle, it would be interesting to determine where the error first made a definite appearance. Since Theophrastus' works were handy, it gave me little trouble to see what he had to say on the subject. But it was trouble wasted, because his botanical writings use the word *αὐτόματος* in such a popular sense that nothing can be made of it. It even serves to distinguish wild flowers from cultivated ones.[34] This in effect identifies spontaneity with nature. But setting aside the question of who first intro-

[32] *Meta.*, Z. 7, 1032 a 28-32. Such perplexing passages as *Hist. an.*, V 1, 539 a 23- b 16 are not actually inconsistent with the position of this article and even if they were, it would prove little, for Aristotle can easily forget the strictness of his more philosophical definitions when dealing with detailed problems of zoology.

[33] Simplicius p. 330, 18 *in Arist. Phys.* 196 a 14.

[34] *Caus. Plant.*, I xvi 10, 12, 13. II i 1. Other instances of loose usage are I xx 3; *Hist. Plant.*, IV xv 1. IX i 5. IX viii 2.

duced the error, let us return to the previous question of passages in Aristotle which would make the error possible or plausible.

First, and most important, are those passages which make the explanation of monstrosities depend on matter. All spontaneity likewise depends on matter. Similarly both spontaneity and monstrosities are *παρὰ φύσιν* or, more specifically, *παρὰ τὸ ὡς ἐπὶ τὸ πολύ*.

The similarity of explanation at once suggests a closer relation between the two classes, even though the second figure syllogism [35] is invalid. It may have been that the growing influence of extensive over connotative logic led to the discarding of a useless distinction between two types of *παρὰ φύσιν* but such a distinction, it seems to me, is an Aristotelian characteristic. These passages are the only real difficulty and are undoubtedly the source of the other interpretation. All other difficulties, so far as I have determined, are incidental and obscure phrases easily regarded as unintentional inconsistencies. For example a happy monstrosity is hinted at in the *Eudemian Ethics* [36] but its bearing on the present problem is so slight that one might reasonably object even to mentioning it. A later reference in the same work [37] is decidedly more to the point. If the work is Aristotle's we must plead inconsistency, if not, then Eudemus here is consistent with Eudemus in the quotation from Simplicius, and we would be forced to say that once at least Eudemus deviated from Aristotle's teaching. In either case, the reference is insufficient in itself to counterbalance the other evidence. All objections to the present thesis must attack the main body of the argument.

The conclusion, then, is that Themistius in the quotation cited

[35] All monstrosities are due to matter; all spontaneous events are due to matter; therefore monstrosities are spontaneous.

[36] III 2, 1231 a 4.

[37] VII 14, 1247 b 3-4.

early in this article has correctly interpreted Aristotle's thought as expressed most clearly perhaps in *Meta.* Z 9, 1034 a 9-21. Monstrosities are therefore not effects of spontaneity for precisely the reason that Themistius gives and which may now be restated: Spontaneity exists where there is a final [38] but no efficient cause, monstrosities when there is an efficient but no final cause.

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[38] This conclusion has a bearing on another problem, the relation of luck to happiness. A suggestion for an article on this subject comes orally from M. Robin and formally from Hamelin, *op. cit.*, pp. 390-392.

GESTALT PSYCHOLOGY AND SCHOLASTIC PHILOSOPHY (II)

V. The Berlin School and the Concept of Thought Processes.

Writers of the Berlin school do not always make a clear distinction between a *Gestalt* or sensory configuration and a thought process or meaning.

Wulf,[50] for instance, undertook a study of the relation of imagery to the reproduction of figures, which in certain aspects recalls our study of abstraction.[51] He finds that imagery does not always determine reproduction, but that frequently it is determined by *Gestalt*. When we examine what he means by *Gestalt* in his text, we find, at least in certain passages, that he is not speaking of the sensory resultant of n simple sensations but interpretations or familiar concepts of past experience. At times, therefore, the configurational school uses the word *Gestalt* to refer to meaning.

According to Wertheimer[52] thought processes are "concretely characteristic, definitely specified *Gestalt*-processes, analogous to perception on the one hand and feeling and will on the other."

When Koehler was pushed to the wall by Rignano[53] he made

[50] F. Wulf, "Ueber Veraenderung von Vorstellungen," *Psychol. Forschung*, I (1921), 332-373.

[51] T. V. Moore, *The Process of Abstraction* (University of California Publications in Psychology, 1910), I, 2, 73-197.

[52] M. Wertheimer, "Untersuchungen zur Lehre von der Gestalt," *Psychol. Forschung*, I (1922), 47-58, p. 56.

[53] Rignano opposed an affective theory of meaning to the interpretation given by Gestalt psychologists. "To grasp the meaning of an object, is nothing else than to classify it according to its affective character, or from a utilitarian viewpoint — to recognize it as belonging to this or that class which is already known to us from the affective or utilitarian viewpoint." E. Rignano, "The Psychological Theory of Form," *Psychol. Review*, XXXV (1928), 118-135. This article is a condensation and translation of a somewhat longer study that appeared previously: "La teoria della forma della

the following confession: "I agree entirely with Signor Rignano that according to what he has adduced configuration, in its essential nature, and knowing are in general functionally two processes that must be clearly distinguished." [54]

Still later in his *Gestalt Psychology* he returns to the concept of meaning. "Who in the world would deny that a piece of paper, a pencil, and so on, are well known objects? That I know their uses and their names by previous experience and that hence they are full of 'meaning,' shall also be granted without hesitation. But from these facts there is a large step to the statement that neither the paper nor the pencil would exist *as segregated units* in my visual field without that previous knowledge about their practical behavior and use. It may be that before I had that knowledge the same things occurred in the sensory field as units, unknown and unnamed, but still as segregated wholes." [55]

In this contention Scholasticism is in entire agreement with Koehler's theory of *Gestalt* psychology. Sensory segregation and synthesis precede cognitive interpretation. This means that cognitive interpretation follows upon sensory segregation and synthesis. But if that is so there must be a process of production by which the interpretation enters consciousness, and perception cannot be entirely explained by the configuration of physical phenomena in the cortex due to different intensities of stimulation in its various regions. For by Koehler's own admission, prior to experience the field of perception contains a number of meaningless units and their background. After experience, the act of perception gives rise not only to the units and their background (which might perhaps be mediated by a configuration of electromotive forces in the cortex), but also to something more: the interpretation of the units perceived.

nuova Scuola psicologica tedesca," *Scientia* [3], XLII (1927), 145-158; 215-228; 281-290.

[54] W. Koehler, "Zur Gestalttheorie, Antwort auf Herrn Rignanos Kritik," *Scientia* [1], XLIII (1928), 309-322, p. 319. [55] Koehler [44], p. 151.

Koehler finds difficulty in establishing a valid theory of knowledge and still maintaining the following principles.

1. The cortical process in the act of perception has a definite *Gestalt* or configuration.

2. The retinal process from which it is derived is a sum of unconfigured stimulated points.

3. The waves of light on the way from the objects to the organ of sense "are an unorganized mass of independent events." [56]

Configuration, therefore, is something added to experience, a *Produktionsvorgang* after all; but a process of production that has no objective counterpart.

He appeals in his dilemma to what is really Mueller's idea of the contour that separates an object from its surroundings: "the relations of neighborhood and similarity and difference among the stimuli." But if such relations are really reflected in the cortical configuration and of and by themselves constitute knowledge, all objects would be known at first sight. Known and unknown objects impress their contour relations to other objects with equal facility.

The only escape seems to be an appeal to past experience. But if past experience gives knowledge of the present Koehler must admit some kind of process of reproduction and so side with Mueller or the school of Gratz and Scholastic philosophy.

After all the labor on the physical factors involved in visual perception has been evaluated to its utmost, we find that Koehler's ionic theory of perception can, at most, give a possible basis for one element in perception: the marking off of certain areas in the visual field. If knowledge can be reduced to a differentiation between figure and background, Koehler's theory contributes to our understanding how such a differentiation is brought about. But if the differentiation of figure and background is merely a presentation of things to be interpreted and

[56] Koehler [44], p. 181.

interpretation is the formal and essential ratio of knowledge, then Koehler's theory of *Gestalt* is hopelessly inadequate.

Koehler therefore recognizes the problem of meaning but does not grapple with it. He tells us that objects of perception are "more than purely optical entities under most conditions of life." But he frankly owns: "I cannot tell you briefly how *Gestalt* psychology would treat this fact." [57] "Since we need firmer ground under our feet we prefer to *introduce* our standpoint by showing how it works in vision, because there we have the best methods for concrete, experimental decisions." [58]

He goes so far as to intimate that self-consciousness must be located in a particular area in the brain which is in association with the various sensory centers. "What, then, is the mutual localization of the 'self' as an experience and of 'things' as other experiences? Obviously, the 'self' is experienced in one place, and 'things' are experienced in others around it." [59] This seems to be a rather crude speculation, no matter how much it may be complicated by conceiving of a configuration of radiating waves of stimulation proceeding from the various cortical areas involved.

Koehler,[60] in a most strange fashion, attempts to rule out the factor of past experience in perception because when well-known numbers and letters are hidden in various puzzle pictures, the form known in past experience does not stand out at once from the unexperienced drawing in which it is hidden. Puzzle pictures have various elements in their perception but Koehler's use of them to rule out the influence of past experience is entirely beside the point. Certainly if one had never seen numbers and letters before in his life he would neither pick

[57] W. Koehler, "An Aspect of Gestalt Psychology," *Pedagogical Seminary*, XXXII (1925), 691-723, p. 721.

[58] Koehler [57], p. 723.

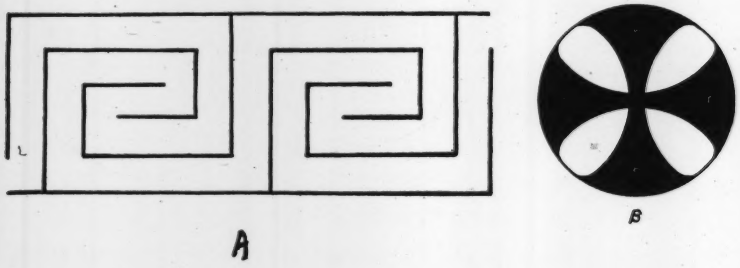
[59] W. Koehler, "The New Psychology and Physics," *Yale Review*, XIX (1930), 560-576, p. 571.

[60] Koehler [44], p. 205 f.

them out in puzzle pictures nor recognize them when they stand alone.

Koehler would replace the law of association by the law of *Gestalt* according to which the repetition of a part leads to the repetition of the whole.[61] He pokes fun at the production theory,[62] but just what knowing is he leaves unsettled. It is Kurt Koffka who comes out definitely and unmistakably against the existence of the thought processes.

Koffka was stimulated to the expression of his position by a study of Benussi.[63] Benussi made use of what he termed equivocal configurations such as the accompanying drawings.



A B

In figure *A* one sees either one of two things: a white figure winding endlessly on a black background, or two series of black hooks placed opposite each other. In figure *B* (not in Benussi) one sees either a Maltese cross or an object resembling a flower with four petals.

When one sees one of the two alternatives, e. g., the flower, the white spaces stand out in the foreground and the black spaces retire into the background. This phenomenon is spoken

[61] W. Koehler, "Concepto de asociación," *Archivo de la Soc. de biologia de Montevideo* (1930). Suppl. 19-24. *Fide Psychological Abstracts* (1933), 69.)

[62] Koehler [41], p. 171, footnote p. 201.

[63] V. Benussi, "Gesetze der inadaequaten Gestaltauffassung," *Archiv. f. d. ges. Psychol.*, XXXII (1914), 396-469.

of by *Gestalt* psychologists as the alteration of figure and ground.[64]

Benussi argued that the equivocal configuration is transsensory (*auessersinnlich*), for a constant complex of sensations cannot give rise to different objects of perception. "There must, therefore, take place a process x between the sense impressions which remain constant and the ideas of the figure which happen to turn out to be one thing or another. According as the process x transpires in this manner or in that, it leads under the influence of and in spite of the supposition of equal and constant sense impressions to representations of entirely different objects. That this process cannot be sensory is evident." [67]

Benussi's argument, if valid, undermines the foundations of the Berlin school, and hence Koffka [68] attempted to escape from the difficulties in which Benussi had placed the revolt against the intellectualism of Gratz.

Koffka argued that the stimuli were constant, but the sensations were different; and so placed himself in the position of maintaining that in spite of the constancy of the external stimuli and all the external conditions the sensations underwent sudden and complete reversals without any x-process intervening to account for the change.

Koffka has found a verbal but not a real solution of the

[64] The terms figure and ground or, as we should prefer, figure and background, are attributed by Koehler to Rubin [65], but as early as 1900 Schumann in a critique of Ehrenfels published an extensive study of figure and ground [66].

[65] E. Rubin, *Visuelle wahrgenommene Figuren* (Kobenhaven, Christiania, Berlin, London) 1921. Danish in 1915. We have not seen this work.

[66] F. Schumann, "Beitraege zur Analyse der Gesichtswahrnehmungen," *Ztschr. f. Psychol. u. Physiol. d. Sinnesorgane* (I), XXIII (1900), 1-32; (II), XXIV (1901), 1-33; (III), XXX (1902), 241-291; (IV) XXXVI (1904), 161-185.

[67] Benussi [63], p. 400.

[68] K. Koffka, "Zur Grundlegung der Wahrnehmungspsychologie," *Ztschr. f. Psychol.*, LXXIII (1915), 11-90.

difficulty, for the fundamental attributes of the sensations involved, their quality, intensity, extent, duration, undergo no changes except in so far as the attributes of a complex of sensations are subject to subjective accentuation.

In the perception of a configuration it is necessary to bear in mind two elements:

(a) the subjective accentuation of the sensory elements.

(b) the interpretation of the groups of elements accentuated.

The first element is dwelt upon at length by the *Gestalt* psychologists. They evade the second, for it cannot be explained as a pure sensory synthesis. But it is precisely this second element involving the relation of the sensory elements of perception to items of past experience that is the most characteristic phenomenon in the fluctuations of perception which one experiences in looking at equivocal figures. Now one sees a cross, now a flower. Nothing transpires even in mental life without an adequate cause. It is necessary, therefore, to suppose an internal x-process to account for these fluctuations if we grant that the external factors are constant. This internal x-process must be of such a character as not only to produce a subjective accentuation of certain sensory elements but also to relate these elements to conceptual interpretations of past experience; and that, too, in a unit act of perception.

One has but to repeat the illuminating and ingenious experiment of Gemelli,[69] build up a configuration line by line and suddenly have the meaning dawn on one to experience what takes place when a concept configures the sensory elements of perception.

True, one may point to two sensory groupings as well as to two interpretations. In one sensory grouping certain parts stand out and in another, other parts. The sensory grouping is not the interpretation and the interpretation is not the sensory

[69] A. Gemelli, "Ueber das Entstehen von Gestalten," *Archiv. f. d. ges. Psychol.*, LXV (1928), 207-268.

grouping, although the two are intimately related. Any theory that would account for the sensory groupings and not for the interpretation is an attempt to give us Hamlet and eliminate the Prince of Denmark. And this is precisely what *Gestalt* psychology does in the attempt to explain sensory organization and ignore intellectual interpretation.

Koehler [70] finds no more in Benussi's problem than alterations due to local effects on the retina from persistent fixation and sees an analogy to it "in electrolytical cells in which the current polarizes the electrodes and thereby creates forces opposed to itself."

Such a theory might possibly account for alterations in the prominence of various visual elements in the picture, but the problem is not to show how fluctuations of some kind may take place, but to explain configured fluctuations that involve conceptual interpretations with their relations to past experience.

The fluctuation between figure and ground is after all a good illustration of two fundamental principles in human psychology.

(a) Whatever the normal mind attends to is always seen as something that is relegated to some category of information and not merely as a sensory quality.

(b) The mind can attend to only one thing at a time. This principle was brought out by St. Thomas.[71] An experimental study in our laboratory [72] demonstrated that it takes longer to perceive two dots than one, three than two, and so on. The basis of our discrimination of right and left in sound stimuli is the fact that the ear on the side of the sound transmits the stimulus to the cortex sooner than the opposite ear. The mind cannot attend to two impressions at the same time and so we

[70] Koehler [60], p. 185.

[71] *Sancti Thomae Aquinatis.* I. Q. lxxxv. Art. 4.

[72] V. Szeliski, "Relation Between the Quantity Perceived and the Time of Perception," *Jour. of Exper. Psychol.*, VII (1924), 135-147.

do not hear two sounds rapidly following one another, but the temporal difference of the successive stimulation appears in this case as a spatial difference that is a difference of direction. Practical use has been made of this phenomenon in the measurement of the depths of the ocean.[73] It is accurate to 1/200000 of a second.

Considering the fact that two objects cannot occupy the focus point of consciousness at the same time, the fluctuations of figure and ground must be subject to a variety of internal conditions which will appear to us as accidental, as well as to voluntary and involuntary eye movements and positive effort to interpret what is seen in the light of some definite meaning.

In the same article Koffka [74] dwells upon a concept that is quite common in configurational psychology. The whole, he says, cannot be analyzed into its parts, nor can it be built up out of them. On this account descriptive analysis of experience is impossible, for, in order to analyze, attention must be focused first on one part and then on another. When this is done the entire nervous system undergoes a change and, therefore, also the whole experience. If in the process of analysis we come to sensations as final elements, this proves only that they were contained in the original perception, but in the process of analysis we have destroyed the original living whole.

And so Koffka retires from the field of introspectional analysis and yields the whole region to the Cornell school.

But as a matter of fact he is merely refusing to consider, as did the Cornell school, the consciousness of meaning which can neither be explained by Hume, nor by the modern sensationalists of the Cornell school, nor by Koehler, Koffka, and the *Gestalt* psychologists.

If one takes into consideration all that introspection reveals,

[73] H. C. Hayes, "Measuring Ocean Depths by Acoustical Methods," *Journal of the Franklin Institute*, CXCVII (1924), 323-354.

[74] Koffka [68], p. 58.

namely, the sensations, which constitute the matter organized, and the meaning, which constitutes a formal principle configuring the sensory elements, then the whole can be analyzed into its parts and formed again by their synthesis.

VI. Gestalt Psychology and the Pathology of Perception.

Pathology, at times, enables us to get an insight into normal processes by isolating what we could otherwise never study except as affected by the presence of other components.

There are two types of patients whose condition throws light on the psychology of perception:

(a) patients who commence to see without the adjuncts of past perceptual experience. Such patients are those who, by reason of congenital cataract, were unable to see form or judge distance, but perceived only a diffused brightness or perhaps a few shades of colored light, until their eyes were suddenly opened by the removal of the opaque lenses that clouded vision.

(b) patients who in virtue of the onset of cortical blindness lose the power of associating present sense-perceptions with past experience.

(A) *Patients operated on late in life for congenital cataract.*

In patients born with congenital cataract and operated on well after attaining the age of reason, we have an opportunity of studying visual perception.

Such patients when they first look out on the visual world find it configured. Configuration must, therefore, be the immediate result of visual perception independent of experience. These patients have to learn almost everything about the visual world, but they do not have to learn how to separate out the objects of this world by the development of a process of configuration.

Objects seen are in general utterly unknown to them, although,

as we shall see, they are at times able to deduce the interpretation of something they see for the first time by reasoning from the data of their past experience.

Perhaps the earliest case is that reported by Cheselden.[75] His patient presented the exceptional feature that " when he first saw, he was so far from making any judgment about distances, that he thought all objects whatever touched his eyes (as he expressed it), as what he felt did his skin." [76]

He presented the usual feature of inability to perceive the nature of the objects he saw, and had some difficulty in learning the objects of sight. " Having often forgot which was the cat, and which the dog, he was ashamed to ask; but catching the cat (which he knew by feeling) he was observed to look at her steadfastly, and then setting her down, said: ' So puss! I shall know you another time '." [76]

Ferrer's case, when he first made use of sight, guessed that what he saw was moving and that it was Ferrer's hand attending to the dressings.[77] He was shown familiar objects such as a pair of scissors, a hat, a valise, a vase. He would say, " I see that you have in your hand an object of this form," and then trace the outline with his finger in the air, " but I don't know what it can be." [78] When, however, the object was placed in his hands he would exclaim with surprise, " Can it be such a thing! " (*Ah si es tal cosa!*)[79]

He had some appreciation of geometrical form when the

[75] W. Cheselden. Observations made by a young gentleman, who was born blind, or lost his sight so early that he had no remembrance of ever having seen and was couched between 13 and 14 years of age. *The Philosophical Transactions from the Year 1719-1733.* Abridged. (London: 1734), 491-493.

[76] Cheselden [75], p. 492.

[77] " Doctor estoy viendo. En medio de lo azul he visto algo más azul todavía que me parecía moverse: yo creo que era su mano." Ciego de nacimiento operado con éxito a los 29 años. *Revista Medica Cubana,* XXXV (1924), 826-834, p. 828.

[78] Ferrer [77], p. 828.

[79] Ferrer [77], p. 829.

object was large. Thus he thought a closed door was a wardrobe because it was square.

The size of objects was estimated by the visual angle they subtended, small things close up appearing as larger or equal in size to big things at a distance. He was surprised at the size of his fingers when he looked at them and compared their size with what they seemed to possess when he felt them with his eyes closed. When asked to take hold of something he saw, he would lift his hands right in front of his eyes and grope in vain.

Before the operation he could see blue, red, green and yellow when the illumination was brilliant. One of the greatest surprises of the operation was the number and variety of colors.

Ramsay's case seems to have been very intelligent and quickly learned to estimate distances. "When he first looked out of a window on to the street and pavement below, he said he felt that if he had a stick he should be able to touch it; and thus he had not the feeling recorded of the boy operated on by Cheselden in 1728, who thought that all objects he saw 'touched his eyes' just as he had formerly got his impressions of things by pressure against the skin." [80]

One of Raehlmann's [81] patients concluded that the thing he saw on his left was the stove and the thing alongside it the door in virtue of his memory of feeling for them in that direction before his cataracts were removed.

The deduction of some of these patients concerning the nature of what they see is very interesting. Dr. Ramsay gives us the following account of the first object his patient saw.

"The first thing he actually perceived was the face of the house surgeon. He says that at first he did not know what it

[80] A. M. Ramsay. Case of a man blind from congenital cataract who acquired sight after an operation when he was 30 years of age. *Transactions of the Glasgow Pathological and Clinical Society, 1901-1903,* IX, 180-185, p. 184.

[81] E. Raehlmann, "Physiologisch-psychologische Studien ueber die Entwicklung der Gesichtswahrnehmungen bei Kindern and bei operierten Blindgeborenen," *Ztschr. f. Psychol.,* II (1891), 53-96, p. 75.

was he saw, but when Dr. Stewart asked him to look down, the sense of hearing guided his eye straight to the point whence the sound came, and then, recalling what he knew from having felt his own face, he realized that this must be a mouth, and that he must be looking at a face." [82]

Latta, who spoke with Ramsay's patient later, gives the information: "It should be added that he felt his own face with his hand while he looked." [83] Latta also adds the interesting note of how this patient deduced the meaning of a picture: "He told me, e. g., that he recognized certain objects as pictures, because he knew that pictures hung on walls." [84]

It is interesting to note that these patients can deduce the meaning of what is seen before the acquisition of visual images. Latta records of Ramsay's patient that when he saw him on May fourth he did not know what visual images were. Before he had seen a human face he deduced its meaning from the idea of the mouth as the place from which the voice comes and that what surrounds the mouth must be the face. At that time he could have had no visual imagery of a face and must have been exerting a suprasensual activity in relating the visual face never before seen to the tactual experience of his own face, for he could not feel the visual face nor see the tactual one.

Upright vision is a native datum of the mechanism of vision. Thus Dr. Ramsay writes of his patient: "From the very first he saw everything in its actual position, showing that the retinal inversion of a picture is interpreted psychically without any education." [85]

Stucky notes in his case: "After the operation all objects were seen in their natural position, proving that the retinal

[82] Ramsay [80], p. 183.

[83] R. Latta, "Note on a Case of Successful Operation for Congenital Cataract in an Adult," *Brit. Jour. of Psychol.*, I (1904), 135-150, pp. 149-150.

[84] Latta [83], p. 140.

[85] Ramsay [80], p. 183.

inversion of a picture is interpreted without any education." [86] This patient, however, apparently saw dimly until he was two and a half years old.

Evidently in these patients configuration is an immediate datum of experience, but configured experience has no meaning. They sometimes attain to meaning by a genuine process of deduction, so that it is something produced over and above the configuration.

(B) *Gestalt psychology and cortical blindness.*

Brain pathology throws light on the theory of knowledge by the study of certain disturbances of perception due to cerebral injury. Sigmund Freud with his genius for coining names invented the term *agnosia* for the various forms of inability to interpret stimuli coming from the special senses.[87]

Liepmann [88] called attention to two very different forms of agnosia based on two ways in which we may analyze a sensory presentation into its component parts.

(a) We can analyze an object seen into areas of color with degrees of brightness and form.

(b) We can analyze an object seen into various parts, e. g., a dog into head, neck, trunk, tail and legs; or we could analyze the dog seen into hide, bones, intestines, etc. There are also various other modes of analysis. Thus we could distinguish between a dog and a sheep, not only by talking about their sensory qualities, but also by mentioning facts as to their life history and habits.

Liepmann thus raised the question whether or not there are two kinds of agnosia corresponding to the two types of analysis

[86] J. H. Stucky. Case of blindness as a result of congenital cataract of forty years' duration—operation—restoration of sight. *Louisville Monthly Journal of Medicine and Surgery*, XI (1904-1905), 169-170, p. 170.

[87] Freud [14], p. 80.

[88] H. Liepmann, "Ueber die agnostischen Stoerungen," *Neurologische Centralblatt*, XXVII (1908), 609-617; 664-675.

and answered this question in the affirmative. The first form he designated as a dissociation of dissolution and the second as a disjunction of attributes. Let us term them *dissolution of sensory qualities* and *disjunction of attributes.*

Liepmann suggested that the " dissolution of sensory qualities " might be due to focal injury in the brain, but "disjunction of attributes " to pathological conditions affecting the entire cortex.

It will be evident on a little consideration that " dissolution of sensory qualities " would lead to an inability to see configurations, but that " disjunction of attributes," while leaving intact the ability to see configurations, should do away with the power to perceive meaning.

It is, therefore, of great importance for our problem to see whether or not these conditions are actually found *in rerum natura.* Monakow wrote in 1914[89] that a splitting of knowledge into sensory qualities which could not be synthesized due to a local injury in the brain was psychologically conceivable but pathologically unknown.

Since then, however, there has been reported a case that seems to be really one in which there is, at least in certain situations, a " dissolution of sensory qualities " in perception and it resulted from local injury in an otherwise normal brain.

This is the classic case reported by Goldstein and Gelb.[90] Their patient manifested a reduction of the power of sensory synthesis rather than its entire lack. For example, he would be shown an object, perhaps a chair. He saw that it was a long-drawn-out, mixed-up kind of contrivance, that it was black and dark red. On being allowed to look at it for some time he finally recognized it as a chair.

[89] C. v. Monakow, *Die Lokalisation im Grosshirn* (Wiesbaden: 1914), Pp. xii + 1033. 453 ff.

[90] K. Goldstein and A. Gelb, " Psychologische Analysen hirnpathologischer Faelle auf Grund von Untersuchungen Hirnverletzter. I Abhandlung. Zur Psychologie des optischen Wahrnehmungs- und Erkennungsvorganges," *Ztschr. f. d. ges. Neurol. u. Psychiatrie,* XLI (1918), 1-142, p. 42.

Many simple drawings he could not recognize at all and even simple geometrical figures, unless by movements of his head he outlined their shape. Although he recognized pictures more easily than mere outline figures, they were often to him merely a mass of unconnected spots of color. There was no *Gestaltauffassung* or apprehension of configuration.

This patient was also unable to see movement. He could see the object in one place and then in another but he could not see movement, nor could an illusion of movement be obtained by Wertheimer's experiment.[91]

The essential features were as follows: a soldier after a penetrating wound in the occipital region of the brain recovered from his injuries with a marked restriction of the visual fields. He could recognize objects with difficulty, figures in outline not at all without head movements. He could not tell the difference between straight lines and curves. He was unable to perceive movement.

In other words, he was unable to perceive two important attributes which were referred by Aristotle to the *sensus communis*, namely, shape and movement.

Goldstein and Gelb feel that they are dealing here with an injury to the brain in the left occipital region which spared the cortex of the cuneate gyrus but seriously injured a cerebral mechanism with which it is associated.[92] The peculiar feature of this case is that it points to a condition of permanent cortical blindness in an otherwise intact brain. The condition that this patient manifests is dominantly what Liepmann would term "dissolution of sensory qualities." It is possible that, as Liepmann suggests, "dissolution of sensory qualities" is due to a local injury in an otherwise sound brain, but that "disjunction of attributes" implies a disorder of some kind which affects the cortex as a whole.[93]

[91] Cf. *supra*, p. 317.

[92] Goldstein and Gelb [90], p. 139.

[93] For a critique of Gestalt psychology based on an analysis of this case

On the other hand we have a patient of Lissauer [94] who could make the primary sensory synthesis of the visual qualities perceived but could not by sight apprehend the meaning of objects or pictures. As soon as he was given the object to feel, he recognized it at once.

Lissauer's patient could draw an object shown him, for example, a watch with its round form, the ring for the chain and the fluted head of the stem with enough detail so that a normal person could easily recognize his drawing. But he could recognize neither the object nor his drawing of it. When the object was placed in his hands and he could feel it, he recognized and named it at once.

Evidently the visual picture of the object is not the interpretation, nor is the kinaesthesis of drawing the interpretation; the kinaesthesis of drawing, either by itself or along with the visual picture, is not an adequate basis for interpretation.

Apparently the patient's visual picture was adequately configured, as indicated by the drawing, but configuration alone does not give meaning.

In Lissauer's patient we have, as suggested by Liepmann for "disjunction of attributes," a brain that was probably suffering from a general pathological condition. The man was eighty years old and his mental condition for the year prior to his examination showed some signs of deterioration.

Stein and Buerger-Prinz [95] report an interesting case, unfortunately without giving data about the brain other than to say that it manifested severe and multiple alterations. The patient had arteriosclerosis and complained of blindness after his second

see K. Gneisse, "Die Entstehung der Gestaltvorstellungen," *Archiv. f. d. ges. Psychol.*, XLII (1922), 295-334.

[94] H. Lissauer, "Ein Fall von Seelenblindheit nebst einem Beitraege zur Theorie derselben," *Archiv. f. Psychiatrie u. Nervenkrankheiten*, XXI (1890), 222-270.

[95] J. Stein and H. Buerger-Prinz, "Funktionswandel im Bereich des optischen Systems," *Deutsche Ztschr. f. Nervenheilkunde*, CXXIV (Berlin: 1932), 189-214.

stroke of apoplexy. When shown certain objects, e. g., a lead pencil, he could not make out what they were, but when allowed to take them in his hand, named them at once. When allowed to look at a picture he might at times recognize it immediately, but very shortly it became a mass of meaningless lines. He could point to the windows in the picture of a cathedral, point to the pinnacles and say they were steep things like a roof, but when asked to put the whole thing together could only say it was some kind of house. He manifested at times an inability to perceive motion, saying the thing was now here, now there.

This case presents probably a combination of Liepmann's "dissolution of sensory qualities" and "disjunction of attributes," the former arising from an involvement of the cuneate gyrus or its association paths, the latter from the general cerebral arteriosclerosis. But to a very large extent the subject cannot interpret because he cannot synthesize optic stimuli, or can do so only for a moment, his power in this matter being subject to marked fatigability.

Wolpert [96] records a case with disturbances of interpretation which he regards as due to a toxic action on the brain probably from uraemia. There seems to have been no local injury in the region of the cuneate gyrus. The interesting feature of this case is that it presents a stage in the deterioration of interpretation. The patient could recognize objects in a picture, but he could not interpret the picture as a whole. Furthermore, he could not interpret situations, losing his way in familiar surroundings.

The cases we have mentioned are relatively rare,[97] but they are sufficiently numerous for us to realize that we are dealing

[96] I. Wolpert, "Die simultan Agnosie-Stoerung der Gesamtauffassung," *Ztschr. f. d. ges. Neurol. u. Psychiatrie*, XCIII (1924), 397-415.

[97] For an excellent summary of this whole field and an insight into the complicated problems of the sensory synthesis, see O. Poetzl, "Die Aphasie Lehre: Vol. I. Die optisch-agnostischen Stoerungen," *Handbuch der Psychiatrie*. Edited by G. Aschaffenburg (Leipzig: 1928). Pp. x + 358.

with the disturbance of normal mechanisms of the nervous system. The case of Goldstein and Gelb is perhaps alone in manifesting a disturbance of the perception of configuration associated with a local cerebral lesion. But the case of Stein and Buerger-Prinz also manifested at times an inability to configure impressions and all the lines of a figure became a tangled unconfigured mass.

Wolpert's case, where the patient can recognize objects but is unable to interpret pictures, is relatively rare, but cases could probably be multiplied if one would examine from this point of view all patients with incipient *dementia senilis* or any incipient dementia. The chief difficulty might be to catch the patient, as it were, just in the right stage of cognitive deterioration, if one wanted a pure case of defect of interpretation of situations.

It has been pointed out [98] that these various defects bear a certain resemblance to the stages in the development of perception in children.

Is there any stage when to the child all visual stimuli are an unconfigured mass of sensations?

The three-year-old child can see individual objects in a picture but cannot interpret the picture as a whole. At seven, however, the normal child can not only see objects but also interpret a picture as a whole.

Our examination of this field has made it evident that mere sense qualities cannot be interpreted. They must be configured and this configuration is the primary sensory synthesis, the *Gestalt* of the Berlin school.

This primary sensory synthesis or configuration does not constitute perception. It requires a second synthesis in which it is related to categories of past experience.

In this secondary synthesis we can note two stages:

[98] Poetzl [97], p. 49.

(a) the synthesis of the object perceived to its own categories of perception.

(b) the synthesis of the object perceived to the categories of perception of other objects in the situation of which it forms a part.

This relating of a perceived object to past experience involves a neurological process, for it becomes impossible in conditions which involve a general cortical defect. The interrelation of cortical processes involved is a neurological configuration which has its conscious counterpart in sensory experience. This conscious counterpart would be spoken of in Scholastic psychology as the activity of the internal senses, the whole being in Aristotelian terminology the *phantasma* or sensory presentation of an object of experience, and the result of the activity, not only of the external, but also of the internal senses.

This *phantasma* is the basis, in man, of all cognitive interpretation. Any two objects may be seen as a configured whole. One does not see, in virtue of any purely sensory quality, their relations of similarity and diversity; but one can perceive these relations by a cognitive act, and this cognitive act is something over and above the primary sensory synthesis or *Gestalt*. Its immediate basis is the secondary sensory synthesis which Scholasticism termed an act of the *sensus communis*.

VII. Scholasticism and the Sensory Synthesis in Perception.

If we look back upon the stages we have discovered in the history of psychological attempts at a theory of knowledge, we find the following:

(a) a primitive sensationalism which recognized only sensory qualities and their combinations. This theory finds its origin in modern philosophy in Hobbes, reaches its acme in Hume and its fullest psychological development in G. E. Mueller, Titchener and the Cornell school.

(b) a pronounced and outspoken intellectualism derived from Bretano and developed by Meinong and the school of Gratz.

(c) a reaction to intellectualism and a return to sensationalism in the form of a sensory synthesis, the configuration or *Gestalt.* This movement, emanating from the school of Berlin, now dominates the field of psychological thought. It directs its critique against the sensationalism of Hume and the intellectualism of Meinong.

The sensationalism of Hume finds its counterpart in Greek philosophy in Democritus.

The intellectualism of Meinong may be looked upon as having an analogue in Plato.

The configurationalism of Koehler and the *Gestalt* psychologists finds no isolated counterpart in Greek philosophy,[99] but the clear realization of the necessity for a sensory synthesis was first attained by Aristotle.

Aristotle's theory of knowledge is a synthesis of the factors recognized by Hume, Meinong[101] and Koehler. Prior to Aristotle we find in Plato a definite recognition of the necessity of a synthetic faculty in knowledge, but there is no clear distinction between a sensory and a cognitive synthesis for all synthesis seems to be ascribed to thought.[102]

Thus in the *Theaetetus*[103] Socrates says: "No one can suppose that we are Trojan horses, in whom are perched several

[99] For an outline history of the precursors of Gestalt psychology in ancient and modern times, see E. Brunswik, "Principienfragen der Gestalttheorie *in* Beitraege zur Problemgeschichte der Psychologie," *Festschrift zu Karl Buehlers* 50. Geburtstag (Jena: 1929). Pp. 78-149. Also—

[100] W. D. Commins, "Some Early Holistic Psychologists," *Journal of Philosophy,* XXIX (1932), 208-217.

[101] Meinong accentuated the necessity of cognitive activity in perception. He did not of course deny the necessity of sense perception nor did he deny the factor of sensory synthesis.

[102] John I. Beare, *Greek Theories of Elementary Cognition from Alcmaeon to Aristotle* (Oxford: 1906). Pp. vii + 354. P. 260.

[103] B. Jowett, *The Dialogues of Plato.* 4 vols. (New York: 1883, 1895). Vol. 3, p. 387.

unconnected senses, not meeting in some one nature, of which they are the instruments, whether you term this soul or not, with which through these we perceive objects of sense."

Aristotle pointed out that the special senses perceive their own proper specific qualities, but that there are other properties which are not the object of any particular sense. What can be perceived in two or more ways must have a common center of some kind, and so he postulated the κοινὴ αἴσθησις which Scholastic psychology translated as *sensus communis*. The objects of the *sensus communis* are the common sensibles.

"By common sensibles are meant motion, rest, number, figure, size: for such qualities are not the special objects of any sense, but are common to all. For example a particular motion can be perceived by touch as well as by sight." [104]

If now we consider what the school of Wertheimer, Koehler and Koffka has been studying under the term of *Gestalt* or configuration, we will see that they are such things as Aristotle referred to ἡ κοινὴ αἴσθησις.

But what the Berlin school cannot explain and always evades is the process of knowing, understanding and interpreting, clearly recognized by Aristotle as different from the specific functions of sense and the sensory synthesis of the *sensus communis*.

St. Thomas also recognizes the necessity of the Aristotelian sensory synthesis. In the act of perception the intellect does not derive its information from the sense qualities presented by the external senses, but from the sensory synthesis formed by the internal senses. "*Intellectus autem accipit immediate non a sensibus exterioribus, sed interioribus.*" [105] In this, as we have seen, he is entirely borne out by our present information of cerebral lesions. In certain brain injuries a patient

[104] R. D. Hicks, *Aristotle, De Anima* (Cambridge: 1907). Pp. lxxxiii + 626. P. 77. (*De Anima*, II, vi, 418 a.)

[105] *Sancti Thomae Aquinatis* [49].

can perceive sensory qualities but he is unable to interpret them because the cerebral center or function of sensory synthesis is pathologically affected.[106]

Commenting on Aristotle, St. Thomas says:[107] "The *sensus communis* is a certain power (*potentia*) in which terminates the activities of all the senses." It therefore takes cognizance of no special attribute of sensation but that which is given by the specific sensations of the individual senses. Size and shape are not primary sensory qualities, but no colored object, for example, is ever seen unless it is of a certain size and shape. The color is the proper object of sight, the size and shape are estimated by the *sensus communis.*

From this sensory synthesis the mind derives information on the basis of which action is possible.

This is brought out by Aristotle who uses an illustration which also makes us wonder when we are employing merely a sensory synthesis in perception, and when perception involves an intellectual act of a cognitive and abstract character.

Thus Aristotle says: "What is meant by the indirect object of sense may be illustrated if we suppose that the white thing before you is Diares' son. You perceive Diares' son but indirectly, for that which you perceive is accessory to the whiteness."[108]

Here apparently is an interpretation and Aristotle seems to refer it to the synthesis of the *sensus communis.* St. Thomas admits that it is a sense perception and points out that intellect perceives the individual as having the common nature of the species to which it belongs, but sense perceives the individual only as an object of desire or as some kind of thing that arouses

[106] In the body of the article just quoted St. Thomas says that the internal senses (*vis imaginativa, et aestimativa, et memorativa, et sensus communis*) have a center in the brain.

[107] *Sancti Thomae Aquinatis. Commentaria de Anima,* II, xiii.

[108] Hicks [104].

emotional activity.[109] "The sheep knows this lamb not in as much as it is this lamb (as a member of a genus), but as this thing to which it gives its milk; and this grass, in as much as it is its food." [110]

When we, for instance, reach mechanically for a spoon when eating at table, our act is probably based solely on a sensory synthesis and not upon an intellectual insight. But when one asks us: do you know what that is? and we say, yes, our answer is an act of human intelligence and not a mere sensory synthesis.

According to St. Thomas the *sensus communis* reflects the outside world but it does not actively interpret it.[112] Active interpretation belongs to the intellect.

According to St. Thomas sense qualities might attain to consciousness unsynthesized, but they could never be interpreted. Thus he says, commenting on Aristotle: "If the phantasmata are related to the intellectual soul as the object of sense is to the organ of sensation, (then) just as the organ of sense cannot sense without some object of sensation, so the soul cannot understand without phantasmata." [113] As pointed out in the previous number of this review, it is a mistake to understand *φαντάσματα* in this passage of Aristotle or in the commentary of St. Thomas, as the revived imagery of past experience. The

[109] Note that Rignano's concept of meaning (see note 53) approximates the Thomistic concept of sense perception.

[110] *Sancti Thomae Aquinatis* [49] *ad finem.* One might here go into the very valuable work of Koehler on the mentality of apes.[111] His data are in entire consonance with Scholastic philosophy which takes a definite stand in favor of animal intelligence and against the mechanical stimulus and response theory of the animal organism.

[111] W. Koehler, *The Mentality of Apes* (New York and London: 1926). Pp. viii + 342.

[112] "Nor is it necessary that the idea (*species*) formed in the organ (of the *sensus communis*) should be produced in it by any activity on the part of the *sensus communis*; for all the powers of the sensitive part are passive and it is impossible that any power should be at the same time active and passive." *Sancti Thomae Aquinatis* [107], III, iii *ad finem.*

[113] *Sancti Thomae Aquinatis* [107], III, xii. This is St. Thomas' commentary on the famous phrase: *διὸ οὐδέποτε νοεῖ ἄνευ φαντάσματος ἡ ψυχή.* 431 a 14.

phantasma here spoken of constitutes the sensory synthesis of the *sensus communis.* Aristotle goes on to speak of the activity of the eye and the ear in perception and points out that their specific sensory activities are carried on to something else, and that this second thing is a unit. He is referring to the *sensus communis.* So at all events St. Thomas understands him.

"The pupil itself being thus acted upon, it, in its turn, acts upon something else, namely the *sensus communis*; and likewise hearing having been aroused by the air affects in turn the *sensus communis.* And though the exterior senses are many, nevertheless the final thing, in which the various activities of these (external) senses terminate, is one. For it is as it were a kind of common ground (*mediatas una*) for all the senses, as a center in which all lines meet in a point." [114]

The phantasm of the singing bird that I hear and see in the tree is a unit act of the *sensus communis,* a single sensory synthesis. It is derived from two sensations but as the phantasm of the *sensus communis* it is a unit. The intellect can interpret the phantasm of the *sensus communis*; it cannot interpret the disconnected qualities of the special senses.

The *sensus communis* deals not only with the data of different senses but also with data that come from one and the same sense.[115] This object that moves, and this one which is at rest, this object which is large and that which is small, this thing that has one peak and that which has several, are represented to the intellect by the *phantasmata* of the *sensus communis.* As disjoined, unconnected, unconfigured masses of sensory qualities they cannot be interpreted by the intellect.

[114] *Sancti Thomae Aquinatis* [107], III, xii.

[115] "It makes no difference if we take, for the sake of example, either the non-homogeneous, that is, disparate sensory qualities of different genera, such as white, which belongs to the genus of color, and sweet which belongs to the genus of taste, between which the *sensus communis* distinguishes; or whether we take contraries, as white and black, which are of the same genus, for between each the *sensus communis* discriminates." *Sancti Thomae Aquinatis* [107], III, xii.

A little reflection, as well as psychological experiment, will show that past experience in some way affects our present perceptions. This effect of past experience does not come about by the appearance of mental images of one kind or another in consciousness. Such images, if they do come, arise altogether too late to affect the act of perception. Scholasticism would explain the effect of past experience on present sensations as a sensory resultant that modifies the *phantasma* of the *sensus communis*, which is the product of present sensations received in a brain that has been modified by experience.

The rectangular table I see across the room appears to me as rectangular and not as a rhombus with two obtuse and two acute angles. Or let us suppose that a piece of gray paper is seen in the sunshine and alongside of it there is a piece of white paper in the shade. Objectively far more light comes to us from the gray paper than from the white, and yet the gray paper in the sunshine appears to us as gray and the white paper in the shadow appears to us as white; and that, too, immediately and spontaneously without any effort at reflection or comparison.

Helmholtz explained the sensory appearances under these conditions as due to judgments based upon experience. This implies that our thought processes can make objective stimuli appear other than they are. To some extent this is possible, but we must not forget that sensory appearances are sensory and as such are not cognitive experiences.

It is not necessary to suppose a series of intellectual acts in the past experience of the individual which lead him to an alteration of sensory experience as such. In all probability, if such phenomena were to be explained by strictly cognitive factors, we would say that the gray paper looks brighter than the white; but, because it is in the brighter light, we know that in reality it must be darker. We have, however, no such experience. The paper in the sunshine appears to us as definitely gray and the paper in the shadow as immediately and definitely white.

Katz [116] developed experimental conditions for studying this phenomenon. Two rotating disks made of the same material were placed in a box so that the observer could see through a double screen only a small area of each disk. One disk was pure white but was shaded, and the other disk was fully exposed to the light. The bright disk had sectors of black and white that the subject could vary until the two patches he could see appeared equally bright. When he had made his adjustment, the double screen was removed so that he could see the two disks and all their surroundings. As soon as he obtained the "total impression" he no longer perceived the equality he had observed when he was comparing two simple sensations, but he found he had made the variable disk far too dark.

When one observes the isolated patches of visual stimulation one is dealing with simple sensations in the Aristotelian sense. When, however, a visual field is observed in its complex surroundings one is dealing with a resultant of many sensations, and this, according to St. Thomas, involves more than a simple visual quality; its organic counterpart is in some way different from the organic counterpart of a simple sense quality and is therefore said to be due to another sense: the *sensus communis.*

Sensory resultants, therefore, are to be invoked in the explanation of complex sensory appearances rather than calling in the higher cognitive abilities to account for a purely sensory phenomenon. It seems natural to expect that sensory resultants and the *sensus communis* can be modified by experience as well as cognitive attitudes and interpretations.

Indirectly the concept of Helmholtz may have an important element of truth, for when we see well-known objects our

[116] D. Katz, *Der Aufbau der Farbwelt* (Leipzig: 1930). Pp. xviii + 484. P. 194 f. This work was a second edition, Ergaenzungsband 7 to the Zeitschrift fuer Psychologie, 1911, which is better known under the title: *Die Erscheinungsweisen der Farben und ihre Beeinflussung durch die individuelle Erfahrung.*

[117] Katz also undertook a similar study of touch. "Der Aufbau der Tastwelt," *Ztschr. f. Psychol.* Ergaenzungsband 11. Pp. xii + 270.

memory of what they are may give rise to imaginal processes that fuse with the incoming sensations and so lead us to see them to some extent as they have been in past experience, rather than exactly as revealed in the present illumination. This effect of past sensory experience on the present is, however, not strictly a cognitive process but a sensory effect, although it may be conditioned by a cognitive interpretation. This concept of "memory" colors was introduced by Hering. Katz vouches for its validity in his own experience as far as well-known objects are concerned.[118]

Although there is considerable room for discussion as to what elements of experience are primary qualities and what are resultants of a sensory synthesis, it seems from the evidence adduced in the study of the pathology of perception that one must admit with Aristotle and St. Thomas that over and above the fundamental necessity of sensory qualities in perception, these sensory qualities must undergo a synthesis. St. Thomas suggested that the locus of this synthesis is the brain, and in this he is borne out by the results of pathological investigation.

It is also evident, however, from the same pathological studies that the sensory synthesis alone cannot constitute the meaning.

VIII. The Configured Universe and the Equation of Truth.

According to Koehler, experience is undoubtedly configured; but is the universe also configured? And, if so, is the experienced configuration in some manner the expression of its corresponding objective configuration?

One would think that the author of *Die physischen Gestalten*, who prides himself on having pointed out to physicists that their data as well as the data of psychology are configured, would come out definitely for the configuration of the universe. One would think that he would attempt a theory of knowledge which would equate the configurations of perception to the

[118] Katz [116], p. 252.

corresponding configurations of objective reality, and so attain to the equation of truth.

But herein lies something of an inconsistency in the philosophy of *Gestalt* psychology. A beginning was made in the direction of objective correspondence when Koehler took the stand that hypergeometric properties of experience are conditioned by geometrical properties in the configured stimulus (*Reizkonfiguration*).[119]

Later on, however, Koehler repudiates any such theory. "In the last paragraphs I have laid some stress upon the fact that organization in a sensory field is something which originates as a characteristic achievement of the nervous system. This emphasis has become necessary because some psychologists have recently said that, according to *Gestalt* psychology, '*Gestalten*,' i. e., segregated sensory wholes in this connection, exist outside the organism and simply extend or project themselves onto it. This is so absolutely wrong that I cannot comprehend how the misunderstanding arose." [120]

And then in a footnote he says: "One chapter of *Die physischen Gestalten in Ruhe und in stationaeren Zustand* has the title: 'Denn was innen, das ist aussen.' Should these words of Goethe have produced the misapprehension? Who reads the chapter will see at once that that title refers to the similarity between sensory experience and the physiological processes accompanying it, not to the relationship between organic processes and the environment. (Cf. § 181.)"

A little later he forgets about the physiological processes and becomes even more extreme. "One is tempted to say that even a form existing on the retina does not necessarily determine a corresponding form in vision. But we have to insist upon the fact that *no* form at all is given on the retina as a functional reality." [121]

[119] Koehler [41], p. 186, in the chapter "Denn was innen, das ist aussen."
[120] Koehler [44].
[121] Koehler [44], pp. 196-197.

We have already pointed out (see p. 321) that according to Koehler's physical concepts any retinal configuration must be very different from the corresponding cortical configuration, and that if truth is to be a kind of mirror picture of reality without an intellectual interpretation of experience, then knowledge becomes an utter impossibility. But now Koehler increases the difficulty of his psychological foundation for a theory of knowledge by maintaining that

(a) *the outside world is not configured. Any perceived configuration is a physiological product.*

(b) *the retinal process is not configured.*

"By the refractory properties of our eye those rays, which come from one point in the outside world, are made to converge upon one point of the retina; also the geometrical relations of the points on the surface of an object are reconstructed here, in large measure. Still, each local stimulus thus achieved is an independent affair, and rays coming from elements of the surface of one physical object, the sheep for instance, are as indifferently related to each other as they are to stimuli from the sheep's environment. So we have no organization at all in retinal stimulation, no wholes, no groups, no segregation." [122]

This seems to be inconsistent with other things that Koehler has said, and inconsistent with the original statements of Wertheimer about seen movement.[123]

But if Koehler were to maintain that the sensory synthesis takes place in the brain and not in the retina it would agree entirely with the data we have brought forward from neuropathology, and would be perfectly in accord with the surmise of St. Thomas that the brain is the locus of the internal senses.

Koehler maintains thirdly (c) that *even though there is a retinal configuration it may be wholly different from the configuration as seen.*

[122] Koehler [44], p. 176.

[123] Petermann [80] has called attention to the fact that Koehler's *Gestalt Psychology* of 1929 represents a change in his concepts. (P. 108 f.)

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It is strange what a profound effect the dilemma of Hume had on the German mind. Kant tried to get out of it by the postulates of the practical reason, but there are those even in our day who give up entirely the attempt to explain how truth can possibly be an *adequatio intellectus cum rê*, and maintain that truth is merely the consistency of the mind with itself and that objective reality is unknowable, if there is any such thing at all. Koehler seems to be approaching this condition after the bankruptcy of his psychological theory of knowledge.

The problem of the equation of truth has been very much obscured by the assumption of Hume: sensations and their replicas, our mental images, are the only way in which the mind can express its knowledge of the world with which it comes in contact. The old adage,[124] *veritas est adaequatio intellectus cum rê*, has been changed. The word *intellectus* has been taken out and *sensus* put in its place. And so psychologists as well as philosophers have been trying to see how our knowledge can be a mirror picture of reality.

Various professors of psychology look upon it as their primary duty to show the naïve undergraduate how he can never know reality. Wave motions of the ether and the physical nature of a surface that absorbs some waves and reflects others can bear no actual resemblance to color as perceived. A vibrating body is one thing, and a musical tone another, and between the two the mind can never see any resemblance. Is the sugar in the sugar-bowl sweet, or does it become so only when it is put in some one's mouth? and if it is not sweet in the sugar-bowl, what right has anyone to say that sugar is sweet?

[124] St. Thomas gave the following definition of truth: *Veri enim ratio consistet in adaequatio rei et intellectus.* (Sancti Thomae Aquinatis. Q. I. De Veritate. Art. iii corpus.) He referred to St. Anselm [125] who specifically pointed out that truth is perceived by the mind in contradistinction to the senses: *Veritas est rectitudo sola mente perceptibilis . . . Quod vero sola mente percipi dicitur separat eam a rectitudine visibili.*

[125] *St. Anselm. Dialog. de Veritate.* XI (al. xii). Migne, P. L. CLVIII, 480.

So in various ways it can be shown that the sense picture, as a mirror image, does not correspond with reality. Koehler has shown only the utter hopelessness of knowledge being an *adaequatio sensus cum rê.*

But why should knowledge be an equation of sense with reality? Truth does not consist in mirroring the object in the mind so that the mental picture will represent the ultimate physical nature of the *Ding an sich.*

Truth is an *adaequatio intellectus cum rê.* Truth is not a process of mirroring, but an interpretation, and it makes little difference whether physical stimuli are configured or not, or whether the cortical configuration of the ions in solution in the cells of the brain exactly copies the configuration of electrons in the world outside. So long as the subject has learned by experience to interpret correctly the conscious process which in some way rises from a stimulated cortex, the problem of the mirror picture is of no importance whatsoever.

But is there a configuration in the world outside to correspond to the configuration in the perceiving mind? The fact that myriads of organisms adjust to other organisms and the forces of nature shows that in some manner the perceiving mind must truly and for practical purposes represent to itself the outside world.

Confining ourselves to human experience, it is evident that our experience is not a heterogeneous mass of sense data. We see objects: things that have a personal significance and things in which we have no peculiar interest.

From the study of cases with congenital cataract operated on late in life we learn that when the eye without any experience looks out for the first time on the objective world, it sees things and not a heterogeneous mass of visual impressions. Individual objects stand out as individual objects. It sees a configured world independent of any prior visual experience. Configuration, as seen, is not, therefore, a result of sensory experience nor of abstract analysis of visual presentations.

But the configurations seen by these patients have no meaning. When they are told that this thing they see is, for example, a cat, they eventually learn to attach the meaning cat to the visual configuration. The meaning is therefore something over and above the mere visual configuration. Or when they are allowed to handle an object, they can learn what it is and attach to it the meaning acquired in past experience.

Or they can deduce the meaning of what they see by a process of reasoning. This thing I see is hanging on a wall; but pictures hang on walls; therefore this thing is a picture. The syllogism is faulty but the patient, as we have noted, actually deduced the meaning of what he saw in this way and happened to be right. Or again: the voice is coming from what I am looking at; but the voice comes from the mouth; therefore this thing I am looking at must be a mouth, and what surrounds it must be a face.

This deduced meaning is a cognitive something and no mere sensory configuration of visual stimuli, but something over and above, attained by a process of reasoning; and therefore in some manner a production and not something given with the sensory configuration.

On the other hand, a cerebral injury may

(a) do away with the power of configuring visual stimuli so that the patient perceives only sense qualities but not a configured visual unit. From this the *Gestalt* psychologists have rightly argued that perception is something more than a sum of isolated sense qualities.

(b) more commonly leave the power to see a configured object but do away with the power of interpreting the configuration that is seen. And here we observe that the interpretation of the configuration as seen is something over and above the mere sensory configuration. The facts do not favor the new school of Berlin but point back to the original formulations of Gratz.

It is strange that anyone should call in question the con-

figuration of objective reality. Human beings could never adjust to reality if configurations were entirely a subjective product and reality itself a tangled mass of unconfigured elements.

Koehler's unwillingness to regard reality as configured is perhaps a mere result of the *idolus fori*. If one admits a configured universe one must admit formal causes; but no scientist nowadays ever pays any attention to formal causes. He is dealing with efficient causality and anyone who speaks of formal causes is unscientific. Therefore, the world is not configured!

As a matter of fact, however, the things we see are

(a) apparently unconfigured masses as the sand on the seashore. But even then, if we would examine the ultimate structure of a grain of sand, we would find configurations.

(b) things that have an external principle of configuration. There is nothing in the nature of the stone from which a statue has been carved to make it assume the shape it bears, nor in the nature of silver to make it take on the shape of a spoon. The configuration has been imposed from without and the formal cause is the will of the sculptor or the silversmith to make what he had in mind and nothing else.

(c) things that have an internal principle of configuration. One fertilized ovum is very like another; but one, by an inherent power resident within itself under the influence of proper surroundings develops into one kind of organism; and the other, into an organism of a very different sort.

We have but to appeal to evidence of a very familiar kind to see that formal causes are active in human experience. Here is a man shooting at a target. The chemistry of gunpowder and the size of the charge account for the efficient causality in each performance and their sum total. The rifle is an instrumental cause that gives the bullet a certain trajectory in some plane or other. We examine the target and measure the distance of each shot from the center of the bull's-eye. We find the whole series of shots is configured and that, too, according to

the law of error. What accounts for the configuration? Certainly if anybody took up a gun and shot anywhere he pleased, we would not find the shots configured about the center of the target according to the law of error. But what configured the shots? Clearly not the efficient causality of gunpowder, nor the instrumental causality of the rifle, but the will of the marksman to hit the center of the target.

As a matter of fact we find that all sorts of measures in the organic world are configured according to the law of error. The organic world is configured and its configurations cannot be explained without the presence of formal causes.

An elm is configured and so is an oak. If I have learned to distinguish between the elm and the oak, it means that my concept, let us say, of oak interprets the sense impressions from the tree I see and I recognize it as an oak. If my interpretation of these sensations is correct it means not only that my visual sensations are configured, but also that the tree before me has been configured by the formal principle that was once resident in an acorn; which still configures the tree before me, and so distributes the chemicals of the soil and the carbon dioxide of the air that every spring its leaves take on the form of oak leaves and not that of the elm leaves that grow beside it.

If I reach for a spoon at table and take a spoon, not a fork, it means that in my experience I have learned to recognize the form imposed by a human artificer, that the object I am seeking was configured, that my mind configures the sensations I receive from the object, and that my perceptual knowledge is true because the form of perception coincides with the form imposed upon the object by a human artificer. Whether or not my visual sensations are a true mirror picture of the ultimate structure of the object makes no difference whatsoever. *Veritas est adaequatio intellectus cum rê, non sensus cum rê.*

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CURRENT PHILOSOPHICAL REVIEWS AND BOOK NOTES

The Journal of Philosophy—Vol. XXX, No. 10: May 11, 1933.

D. W. Gotshalk: The 'A Priori'. The writer opens up the article with Kant's definition of 'a priori' (a definition substantially held by Professor Lewis in his recent book—*Mind and the World-Order*) as "derived from the mind, universal and necessary", but decides to exclude "derived from the mind" from his own definition, to avoid "psychological and speculative complications."

Mr. Gotshalk makes a threefold distinction of 'a priori'.

(1) The "a priori for" knowledge; (2) The "a priori in" knowledge; (3) The "a priori" knowledge.

(1) The "a priori for" knowledge concerns characteristics universally required in the *object* of knowledge; e. g., space, time.

(2) The "a priori in" knowledge always concerns the knowledge itself, and consists in the characteristics necessary in order that judgments should be knowledge; e. g., Coherence, identity, diversity, etc.

(3) The "a priori" knowledge: If it means purely "derived from the mind" itself, there is no such thing as 'a priori' knowledge of human nature. It is necessary that some sense experience should co-operate with the mind in ascertaining physical knowledge. The "a priori" knowledge is possible in the sense of "universal and necessary", for in some of its forms, knowledge, universal and necessary, is to some extent dependent on some sense experience.

The writer discusses this third "a priori" at length. Applying universal and necessary knowledge to immanent metaphysics, to mathematics, and to mathematical physics, he says that there is no general reason why such knowledge should not exist. Since knowledge (all through the article he is concerned only with human knowledge) of nature always requires sensation, he insists that knowledge here understood is 'a priori' not in the sense of being purely "derived from the mind", but only in the sense of being "universal and necessary". **W. H. Roberts:** The Fallacy of Unipolar Explanation. To expose the common tendency to explain any occurrence by reference to a singular element or factor is the purpose of this article. The mind or the organism contributes fully as much as the object or stimulus. Kant thought that if mind were regarded as one 'pole' in the knowledge process, then knowledge of 'the thing itself' would be forever impossible. Is grass *really* green? If 'really' means 'in itself' apart from all other considerations and entities, then grass is not green. It is not green unless the light that shines upon it contains green rays for it to reflect. If 'really' means that grass is set apart from all forms of consciousness, then it is not green either. The question amounts to this—Are secondary qualities in the object or in the observer? Epistemology should do away with such nouns as 'sensations', 'perceptions', 'ideas'. These are not things, but events. We ought to limit ourselves to verbs if

we want to describe events. Then, instead of saying organisms have sensations, perceptions, ideas, we should say organisms *sense, perceive, conceive* (or ideate). Verbs-made-nouns almost inevitably form themselves into an impenetrable barrier between the object and the mind. Does the polarity of subject and predicate result from the nature of things to be discussed, or is it just an arbitrary method of dealing with them? The consequences from the decision upon this matter are far-reaching. Can we distinguish a thing from its being? A spontaneous event arising, without any connection with other events, absolutely 'de novo', is incomprehensible. It is plainly an instance of the fallacy of unipolarity. Freedom is closely related with spontaneity, but deserves treatment in a separate paper.

The Journal of Philosophy—Vol. XXX, No. 13: June 22, 1933.

Gustav Mueller: Concerning Platonic Esthetics. Plato preserves the Esthetics of the Eleatic School, for his idea of beauty enhances and adorns the "Being" of the Eleatics. Beauty is wholeness become visible. Beauty is everything—it is Time, the 'moved image of eternity', 'the necessary essence of becoming', the 'goal of true love', 'the visibility of God' etc., etc. Plato also absorbed the Pythagorean contribution to Beauty. He made the Pythagorean 'Harmony' one with his philosophy of the beautiful. The sense for beauty is a natural gift; the artist is born; the power of the appreciation of beauty is the gift of the gods. The real true artist is inseparable from his works. In the works you meet and address the artist. Plato's philosophy of art is dialectical. Art and Beauty are not the same. Beauty is internal—a universal idea. Art is a human business. Esthetics cannot stop at the analysis of beauty and art, for it must evaluate beauty and esthetic life with reference to the whole of reality. Man becomes a philosopher pursuing this idea. Plato's esthetics can be as a necessary struggle of reason within itself. Esthetics must be destroyed in its ultimate claims. Beauty contains the whole of life in the serene presence of its being. **Arnold H. Kamiat:** The Problem of Knowledge. Mr. Kamiat advocates, in this paper, epistemological monism. Man and his mind are within the universe, and are one with it. Dualism or Pluralism cannot have room for human knowledge. A mind, real, having existence within reality, being one with it in fact, will, of necessity, know reality. The Knower and the Known are one—made one by the knowledge-relation, which is a unifying relation. The Knower and the Known are one, not in the sense that Idealism would have them one, but, that they enter into a higher unity that comprehends them both. This view does away with the endless confusion caused by the dualistic approach—having a Knower and a Known separate, with no way of bringing them together. The unity of the Knower and the Known in this monistic system, according to the writer, indemonstrable, being itself the ground of all demonstration. With every act of knowledge, the unity of the knowledge-relation is created anew, for this unity is but the actualization of the potential unity of knowers and knowable things, since knowers and knowable things are in some way fitted for one another. The writer attacks the philcsophies of Vaihinger and Bergson in a rather cynical manner, having frequent recourse to reducing their arguments to absurdities.

The Journal of Philosophy—Vol. XXX, No. 14: July 6, 1933.

Ernest Nagel: Charles Pierce Guesses at the Riddle. This article is a critical review of the *Collected Papers of Charles Saunders Pierce*, edited (Vol. 1, 1931; Vol. 2, 1932) by Charles Hartshorne and Paul Weiss. These first two volumes (the complete collected papers are expected to embrace ten volumes) will be rather difficult to evaluate, especially without the perspective of the whole. The influence of Husserl, Whitehead, Santayana, Wittgenstein, Hilbert, Brouwer and others, is easily detected. It is possible that Pierce may be quoted for support by almost all systems of philosophy—Rationalists, Empiricists, Naturalists and Idealists, Realists and Nominalists. This review confines itself to stating a few important themes.

The greater part of Volume One is devoted to an analysis and a speculative view of his three fundamental categories, which seem to be factors continually present in all experience and indissolubly intertwined with one another—(he had a decided inclination toward trichotomous divisions, which he himself recognized would seem ridiculous to the general reader) namely, Firstness, Secondness and Thirdness. His purpose was to found a science of phaneroscopy (phenomenology) which might describe the total of whatever is present to the mind in any way (phaneron).

The category of Firstness indicates the aspect of freshness, life, freedom, variety and spontaneity in the phaneron. It is "pure nature"—eternal—the Power bodies have of determining future manifestations of inefficacious qualities.

The category of Secondness indicates the element of brute fact, struggle, actuality—contingent actuality—something "accidentally actual" in the phaneron—no determination by law.

The category of Thirdness brings in the element of determination by law.

The three active elements in the universe then are Chance, Law, and the Tendency for things to take on habits.

The second part of the fourfold review deals with Pierce's theory of signs—"the most difficult and obscure of all he set down on paper." In this review the matter is treated only in mere outline, referring to some of the applications he makes of his ideas of signs in discursive reasoning. His views on the following are discussed:

(a) The Nature of meaning.
(b) The doctrine of fallibilism.
(c) Logic and mathematics.
(d) Nominalism.

The third section of the paper is concerned with his views on empiricism—on his theory of deduction and probabilism—that science is more sure of the correctness of its general proceedings than the specific results arrived at thereby. Pierce believes in the universal applicability of the hypothetico-deductive method. The reviewer gives five essential features of the theory of deductive probability of Pierce. The fourth and last portion of this article is quasi-commendatory of the editors for bringing "a semblance of order into a wilderness of manuscript." The reviewer throws forth many suggestions as to how the work could be improved.

The Journal of Philosophy—Vol. XXX, No. 15: July 20, 1933.

Sarah H. Brown: The Right and Good; Methodology in Ethics. The only valid datum for ethical analysis is use, i. e., the moral judgment in its concrete setting of laws, customs, etc. The "Good" and the "Right" should rest upon the analysis of the common-sense moral judgment. Science and Ethics both begin with a classification established by usage. The ethical hypothesis as to the nature of "Good" is tested by its satisfaction of certain formal criteria. The chief "Good" must be (a) Intrinsic, (b) Complete, (c) Internal. The method of difference is used to exclude the non-necessary and the ethical as in empirical induction. Nevertheless, the truth of the hypothesis may rest, besides on the datum of usage, on the independent and intuitive recognition of its rightness. Four possibly different types of ethics may rest upon scientific induction.

(1) Induction from usage may bring us to no common principle.

(2) Induction from usage may reveal no common principle beyond the nature within which induced.

(3) Naturalistic Ethics.

(4) Ethics of Socrates and Aristotle.

Besides these there is the ethical theory that is metaphysical. The paper holds that all are false except number (4), which the writer calls 'intuitive induction'. The rightness of the datum is independent of the truth of the hypothesis, and so can act as a test for its rightness. The methodology advocated is opposed both to the Naturalistic and to Metaphysical ethics.

Henry Nelson Wieman: On Using the Word 'God'. Mr. Wieman declares at the outset of his paper, that he does not recognize the validity of any belief, unless founded on evidence of observation and reason. He does not claim that that which he identifies with God is a person—or even conscious. For him, whatever *rightfully* engenders certain reactions—such as love, awe, devotion, reverence, self-sacrifice, etc., is *rightly* called God. God is a term of appraisal, not of description. The evaluative use of words is as important as the descriptive. The word God is essentially evaluative. He decidedly says that he is not a humanist nor an atheist.

The Journal of Philosophy—Vol. XXX, No. 16: August 3, 1933.

Clifford Barrett: Is Idealism Realism? Professor Barrett limits his article to the point of view of "Objective Idealism." He protests strongly against those who identify Mentalism with Idealism.

(1) A large number of Idealists do not rely upon the "esse est percipi" principle, and to them it does not form part of Idealism.

(2) When the Idealist says that the world is mind, he means that it is an intelligible universe whose systematic structure is no mere mechanism, but that it is expressive of the principles of rational order and value. To divide the universe into independent realms of mind and objects, is to realize the possibility of minds knowing objects.

(3) The 'self' is a genuine part of the world, but it is only a manifestation of reality.

(4) Idealism is essentially a Metaphysical position. Man and his mind are in the universe and not outside.

Objective Idealism accounts for error in this wise:

No appearance or manifestation ever presents the total character of the order in which it arises, but appears under the limitations of perceptual experience, and so it may be said to be a false appearance in some degree. True knowledge is possible, nevertheless, since every appearance must arise out of, and manifest, some aspect of the world as it really is.

Idealism and realism are not identical, but neither are they in opposition since they are not offering contrary solutions to the same problem. This is so in reference to the fundamental and essential qualities of the two systems, but not to all the details. The realist in epistemology is an idealist in metaphysics. **Edgar Sheffield Brightman:** The Definition of Idealism. The need of defining terms in systems of philosophy is recognized and explained by Mr. Brightman in this paper. He enunciated five possible reasons for the tendency nowadays to refrain from defining terms. A definition of Idealism is to be sought by examining those systems which are called, or which claim to be, Idealistic. Four main types may be discovered:

(1) Platonic. (2) Berkeleian. (3) Hegelian. (4) Lotzean (or Leibnizian).

(1) Plato's—value is objective; its meaning and origin lie beyond the human power.

(2) Berkeley's—reality is mental; there is no non-mental being.

(3) Hegel's—reality is organic; wholes have no properties which their parts do not have.

(4) Lotze's—reality is personal; only persons or 'selves' are real.

All mentalism (except the solipsistic and atomistic) is Idealism, but not all Idealism is Mentalism. Idealism is not to be restricted to any one type of epistemology. Since Realism has both monistic and dualistic forms—why not Idealism?

Idealism may be 'objective' or 'singularistic'. It may deal in various ways with the irrational factors in the universe. (The Platonic way, the Hegelian way, etc., etc.) Perhaps the differences among Idealists are as important as their agreements.

The writer concludes with a "Platform" of Idealism, which embraces Mentalism without excluding the possibility of objective, non-mentalistic and impersonal idealisms.

No system of philosophy, he declares, can be identified with a definition.

The Journal of Philosophy—Vol. XXX, No. 17: August 17, 1933.

Bruce W. Brotherston: The Empirical Method in Philosophy. The "empiric temper" embraces within its definition the "subjective principle" (subjective experience is a real entity; something is going on in the experiencing subject) and the "realistic intuition." (Things known are independent of the knower and his knowledge.)

Empiricism in recent philosophy followed the lead of the 'subjective principle'. Then it was placed in an equivocal position by the 'realistic intuition'. This paper tries to reveal this equivocal position in William James, and then, to show how his empiricism would dispose of 'realistic

intuition' if it were logically followed out. He cites the history of the empirical movement—its effects on DesCartes, Locke, Reid, Hume, Berkeley. James' attitude reveals itself only as psychological—only a subjective process—and a world of reality independent of the subject and of experience reveals itself at the call of realistic conviction.

As a method of philosophy, empiricism definitely goes beyond sensationalism and sense experience—a position which the empirical temper never was confined to, declaring definitely that experience itself is the one test of truth and reality.

James was unwilling to subordinate the realistic intuition to the subjective principle. His failure was due to the fact that he defined mental action in terms of the *feeling of* bodily actions, instead of in terms of *bodily action* itself. Mr. Brotherston accounts for this by saying that it resulted from the Vedic and Upanishadic lore in which James was steeped. This the writer describes at length.

He concludes by saying that the idealistic and realistic tendencies in the empiric temper of modern common sense are no longer in conflict, but may be discovered in the relative stations. **George N. Belknap:** The Commensurability of Values. In this paper, Mr. Belknap endeavors to determine the extent of the commensurability of truth, beauty and virtue. He says that it is a purely theoretical question in the sense that it is not to be decided by moral or practical criteria, but it is practical in the sense that upon it depends the concrete structure and meaning of moral life. He assumes that values have cosmic roots. They gain their worth from the nature and meaning of the universe, and so, the question is a metaphysical one, and the criteria of commensurability are to be supplied by the nature of the world.

Truth would be the highest in the hierarchy of values if the world were a logically ordered structure. From this viewpoint morality would get a relatively low place in the scale of cosmic worth, because it is concerned chiefly, if not altogether, with what *ought to be* rather than what *is*; whereas, if goodness were the ultimate category, morality would rank first.

He begins with a consideration of virtue, making three distinct types of comparative evaluation: (1) Between acts within the same realm; (2) Between realms taken generally; (3) Between acts from different realms. Finally, he considers the practical conclusions of the alternative hypotheses.

The Journal of Philosophy—Vol. XXX, No. 18: August 31, 1933.

Louis Harap: What is Poetic Truth? The exposition of a theory of poetic truth. Poetic truth is the relation of exemplification between an actual experience and the poetic proposition—defined as "the essence of the psychological response to verbal structures known as poems." **F. C. S. Schiller:** A Suggested Contribution to the Vocabulary of Epistemology. Introspection, common sense, and science afford data relative to their origin—though not absolute. Datives are derivatives of the data, and ablatives the result of abstraction.

The Journal of Philosophy—Vol. XXX, No. 19: September 14, 1933.

James Bissett Pratt: Recent Developments in Indian Thought. The author reviews appreciatively the latest Eastern and Western literature on Indian and Buddhist thought.

The Journal of Philosophy—Vol. XXX, No. 20: September 28, 1933.

Ernest Nagel: A Frequency Theory of Probability. The author proposes a hypothesis on the proper analysis and value of probable inferences.

The Journal of Philosophy—Vol. XXX, No. 21: October 12, 1933.

Sterling P. Lamprecht: Naturalism and Agnosticism in Santayana. Santayana is persistently equivocal on the first principles of existence. Examination of his works reveals the author's profession of naturalism and agnosticism. Human life is a form of madness. Is its cure reason or death? What real conviction lies behind Santayana's irony? **Harold A. Larabee:** Report of the Chicago Meeting of the American Philosophical Association. Held in connection with the Thirty-fourth Annual Meeting of the Western Division.

The Journal of Philosophy—Vol. XXX, No. 22: October 26, 1933.

Arthur O. Lovejoy: Dualism and the Paradox of Reference. The author replies to Mr. Strong's article "The Missing Link in Epistemology." (This Journal, Vol. XXX (1932), pp. 673-687). Examining Mr. Strong's "sensori-motor theory of perception" he concludes that his own theory of referential experience is more tenable.

The Journal of Philosophy—Vol. XXX, No. 23: November 9, 1933.

Donald C. Williams: The Innocence of the Given. By "innocence" the author means inscrutability; and any "ingredient of conscious experience" is the given. After criticizing the principles of modern epistemologies, he affirms his position to be neither skepticism nor subjectivism, but a "contrite fallibilism."

Philosophy—Vol. VIII, No. 31: July, 1933.

R. Hackforth: Great Thinkers. (I) Socrates. This is the first in a proposed series of "Great Thinkers." The author gives us a brief biographical and character sketch of Socrates and incidentally evaluates the sources, particularly those of Plato and Xenophon, from which our knowledge of Socrates' life and doctrines is derived. **C. F. Webb:** Two Philosophers of the Oxford Movement. In view of the fact that this year is being celebrated as the centenary of the Oxford Movement, the author pictures for us the philosophical importance of its two guiding lights (until their conversion to the Catholic faith) namely, John Henry Newman and William George Ward. Whatever philosophy these men wrote was done after their entrance into the Church because "in the Roman Catholic Church converts from Anglicanism found 'philosophy' held in honor as a discipline in its own right. The philosophical systems actually studied in the schools might doubtless be considered by others than Roman Catholics to be obsolete; but . . . these systems . . . represented a body of serious and

often profound reflection upon problems of permanent interest to philosophers." Thus Newman and Ward came to philosophize because of "the psychological influence of a recognized philosophical discipline in stimulating philosophic reflection." "Newman's Essay on Development is particularly praised because it contained the germ of the idea of 'evolution' or at any rate prepared the way for the reception of this idea. His other contribution to philosophy was his theory of the Illative Sense advanced in his Grammar of Assent." Ward, author of *The Philosophy of Theism*, gave as his special contribution to the philosophy of the day the doctrine of the "emphasis upon the necessity to any reasoning from sense experience of reliance on the intuition of memory." Regardless of the religion of these two men we must recognize, says Webb, that they made important contributions both in their "defence of autonomy of the moral consciousness" and in their "stress on the central importance of personality in a philosophical interpretation of human experience." **C. Delisle Burns:** The Sense of the Horizon. Philosophy is merely the product of a particular era of civilization reflecting the intellectual, social, and cultural aspects of that civilization. It is not a definite body of knowledge presenting truth which is constant from age to age and for all ages, but "the philosophy of one age cannot . . . be made viable in another; and an age ends . . . in some last effort to make an obsolete philosophy survive". Further "a philosophy arises out of the social life of the age in its maturity; and it passes into discreptitude, while a new philosophy is arising out of a new society and not out of the ashes of the old doctrine". This is the dismal picture that is painted for us. History reveals the rise and fall of distinctive periods of civilization and their corresponding philosophies. The world at present is experiencing a crisis in this respect. "We stand . . . between a traditional formulation which is inadequate to express our new experience and the possibility of some other formulation, whose character is unknown to us. Our attitude toward the world—our philosophy—should express this situation". Thus the world is abandoned on a precarious perch, without the consolation of a *philosophia perennis*. **W. G. deBurgh:** Croce's Theory of Economic Action. A great deal of modern philosophy is obscured by its individual or subjectivistic terminology. The offence is not so much the coinage of new words as the use of old words with new meanings. Croce offends in this regard at least in several instances, for example, his economic action and concrete universal are 'deceptive' terms. "Economic action or 'Economicity'," quotes Professor deBurgh, "is the concrete form of morality"; and to quote from the article itself, "Croce's 'concrete universal' is rather a universe than a universal." Professor deBurgh was led to examine the practical philosophy of Croce in the hope that it would throw some light on the problem of the relationship between greatness and moral goodness. He finds that Croce's conceptualistic immanentism offers no solution to the problem, and that Reason or the Spirit which is the core of his philosophy is in reality based on an article of faith. DeBurgh rejects Croce's pantheism as untenable and shows briefly the reasons for his preference of theism. **Adrian Coates:** A Pluralistic View of History. Opposed to the view of Croce that history is the activity of a single Spirit,

the pluralistic theory of history posits the individual as the all-important element in any philosophical account of history. "Although it is true that everyone is the child of his age, it is true that every one redintegrates his heritage into something new and unique." Further, the "influence of the past upon the present is throughout a chain of personal relations, and nothing else than that." Finally, "Not in individual purpose but in individual will and character is to be found the causal origin of historical events." With these views one may more or less agree especially since they enhance the value of the individual in opposition to the view of Croce who obliterates all individuality in his spiritualistic pantheism. But one must deny the postulates that Mr. Coates assumes in arriving at his conclusions. He says "the individual person is the only 'thing in itself'. Our knowledge of physical reality is indistinguishable from its nature; being and knowing are the same", though he admits that "in the sphere of history the object of knowledge is an independently existing subject, and knowledge is secondary to being." He seems then to imply that thought and being are one, and we find that his pluralism is thereby limited by monistical implications. Further he states that "the individual personality is the causal basis of actuality" . . . and that "historically, individual personality is ultimate." Historically this may be partly true, but Mr. Coates seems to confuse history with metaphysics. Discussion. **Sydney E. Hooper:** Professor Whitehead's *Adventures of Ideas*. Because Professor Whitehead's philosophical terminology is so exceedingly abstruse, it is almost requisite that a gloss be read by one delving for the first time into the philosophical labyrinth that Professor Whitehead has spun. In this detailed and clear (as far as that can possibly be done) examination and review of Professor Whitehead's latest work, Mr. Hooper, the editor of *Philosophy*, has given us such an assistance. Not only is the work briefed but in the description, Mr. Hooper gives us a "sketch of the metaphysic upon which the work is based"—in other words a commentary on the metaphysics of Whitehead. *Adventures of Ideas* is divided into four sections, namely, "Sociological", "Cosmological", "Philosophical", and "Civilization." It is in the later two sections that Whitehead's philosophy is most professedly expounded and to these two sections Hooper devotes the greatest time and space. It would be beyond the scope of this present notice to attempt even to sketch the principal lines of the philosophy of organicism, hence it can only recommend that Mr. Hooper's review be read prior to or at least in conjunction with the works of Whitehead, especially if it be *The Adventures of Ideas*.

Philosophy—Vol. VIII, No. 32: October, 1933.

Vitalis Norstroem: Intellectualism. This article is a translation by C. T. Harley-Walker of the work of Prof. Norstroem of Gothenburg who died in 1916. It is patently misnamed inasmuch as it is a destructive criticism of intellectualism and the substitution of a kind of voluntarism. The domain of the intellect is within the natural sciences alone and when it trespasses into the field of the humanistic sciences, as philosophy and sociology, "it inevitably leads to dogmatism . . . and sets itself up as a barrier to our

spiritual freedom generally." The act of self-reflection is characterized "as a man running round a tree trying to catch himself". Reminiscent of the Superman of Nietzsche is his answer to the problem of truth in the humanistic sciences. Truth is established "through the power of gifted personalities to attract. Therefore the truth of moral sciences bears the name of power, while that of the physical sciences emerges as a form . . . of thought." "What advances truth is Culture, all else is false"; this is the criterion Norstroem sets. **V. Burwood Evans:** A Scholastic Theoory of Art. It is gratifying to the student of Neo-Scholastic philosophy to encounter a friendly attitude on the part of those outside its fold such as is here exhibited. "Those philosophers who are interested in the contemporary philosophy of all countries have come to recognize the importance of the 'neo-scholastic' or 'neo-thomist' movement," writes Mr. Evans. In this essay neo-thomist ideas in the field of art are considered, though limited somewhat to their expression by Maritain. The broad outlines are laid bare and Thomas Aquinas' "Pulchra dicuntur quae visa placent" is quite thoroughly discussed. Mr. Evans concludes that "the thomist theory of art does not . . . imply a return to the Middle Ages" (considered in a derogatory sense), but that "Its principles can be realized in any period". Further he states that "if we assume that the world is a rational world", and the world certainly is such for Mr. Evans, "one in which there are eternal principles variously exemplified, then the scholastic theory of art as expounded by Maritain is at least possibly true. More than that, it has been shown to apply to all classical art, and indeed to all art. . . . Therefore the scholastic theory of art must be considered as a contemporary theory." **B. M. Laing:** The Problem of Justice in Plato's *Republic*. This question has been treated so frequently and ably that further discussion seems quite unnecessary, but because the *Republic* of Plato is exceedingly provocative of thought it is always worth while to expend further energy upon it. The point that Laing discusses here is the value of the analogies from the arts upon the course of the argument and upon the solution that is finally given as to the nature of justice. He aims "to show that in the *Republic* the course of the argument leads away from the conception of justice as an art, that conception being indefensible and based upon a misunderstanding of the question at issue, and, instead, proceeds towards the elucidation and defence of the view that justice is the principle which co-ordinates different art." Whether he proves his point or not is left for students of Plato and Socrates to decide. In that he universalizes the concept of justice, we are in accord with Laing. **A. E. Garvie:** Values and Their Relations. The question of value is receiving a great deal of attention in contemporary philosophic discussions. Dr. Garvie maintains that "the aesthetic, the moral, and the religious valuations are as necessary and legitimate avenues of approach to reality, the ultimate nature of the Universe, as is the speculative reason or scientific understanding." It is too bad, however, that he lets this thesis hang in air without attempting to prove it. Perhaps he saw that were he to do this he would be unwittingly establishing, if not the autonomy, at least the superiority of the intellect as the way to reality. Garvie writes of a

hierarchy of values, culminating in God, who is "the unifying principle of the whole" of reality. Love is posited as the supreme social value, and the values of truth, goodness, beauty and utility are treated in a somewhat inadequate fashion. **A. H. F. Knight:** Nietzsche and Epicurean Philosophy. Mr. Knight points out the close relationship between the philosophies of Epicurus and Nietzsche by citing numerous passages in Nietzsche in which Epicurean doctrines are praised and sanctioned. But the similarity is even stronger than the passages quoted seem to show when one compares the two philosophies briefly and systematically. Knight shows this by examining their ethics, theory of natural science and theology, and pointing out the striking similarities. **Helen Wodehouse:** Poetry and Truth. The problem here discussed is whether or not it is essential to share the beliefs of the poet to appreciate his poetry. Dr. I. A. Richards answers the problem by stating that there are two kinds of belief, namely, "verifiable belief" and "imaginative assent", and that "only imaginative assent is needed, or, as a rule, possible in reading the poem." Miss Wodehouse seems to think that this distinction in belief is untenable but that the notion of "assumption" gives us at least "part of the answer to our problem." **Joshua C. Gregory:** Cudworth and Descartes. The philosophy embodied in Cudworth's *The True Intellectual System of the Universe,* published in 1678, is here outlined. The purpose of this work was to "disprove the 'the fatal necessity of all actions and events'," and thereby "destroy the various atheisms founded upon such fatal necessity; it would further correct those Christians who mistakenly honoured God by subjecting men to a divinely administered fate". The old Atomism, restored as "The Cartesian Corpuscular Mechanism" had seized hold of the seventeenth century mind, with the result that atheism in various forms had became prevalent. Even Cudworth was forced to accept the "atomology" of the period, but he distinguished between an "enlightened" and an "unenlightened" "atomic physiology." Accepting the "enlightened" atomology, which clearly defined the difference between corporeal and incorporeal substances, Cudworth incorporated it with his theology. A "Plastic Nature", which Gregory describes as "a mind deprived of express consciousness, but left with directive power over matter", was introduced by Cudworth, to "direct the atoms, subordinately to God." The author likens this Plastic Nature to the entelechy of Driesch, and mentions Holism as a form of this philosophical doctrine. As a whole the article gives an insight into the nature and bent of the seventeenth century mind and points out how influential Descartes was on subsequent thought.

The Open Court—Vol. XLVII, No. 923: June, 1933.

J. V. Nash: India at the World's Parliament of Religions. A description of the Assembly and a brief discussion of the various papers read by representative members of the religious sects of India. These papers the author characterizes as "noteworthy for their spiritual insight, their broad human sympathy, and their intellectuality." **William Kilborne Stewart:** Paradox in Morals. An historical commentary on the quotation of Friedrich Schlegel, "Moralitat ohne Sinn fur Paradoxie ist gemein." The writer

concludes that paradoxes of the ethical theory arise but seldom since morality is essentially a conservative thing. **Bernard E. Meland:** Religious Awakening in Modern Catholicism. An account of the religious movements in the modern German Catholic Church. The author indiscriminately discusses the Evangelical Movement sponsored by Friedrich Heiler, the Christocentric piety which would have the Gospel as the sole norm for preaching and the moral life, the growing appreciation for Martin Luther's religious experience as the basis for a new philosophic outlook, the Liturgical Movement of the Benedictines, and concludes that all these splendid movements are doomed to die prematurely due to the intolerance of "a cold, narrow imperialism" which he says is the Catholic Church. **Victor S. Yarrows:** Spengler and the New Pessimism. A refutation of Spengler's "beast-of-prey" idea of man. The author of the article points out Spengler's exaggeration of human viciousness and barbarity on the one hand and his underestimation of man's powers and potentialities as well as his actual achievements for good on the other. **August F. Steffen:** The Professorship of the Printing Press. A plea for harmony between the press and education in what the author claims is their common aim—the enlightenment and progress of the human race. A detailed account of the extent to which the press enters into our social fabric today. **Gustave Carus:** The Age of Paper. A summary of the history of paper-making and the importance of this commodity in the history of civilization. **Henry Charles Suter:** Carillons versus Cannons, Gardens versus Guns. A suggestion that there are other forces more expeditious and effective than war whereby we are able to strike fear into the heart of a foe.

The Open Court—Vol. XLVII, No. 924: July–August, 1933.

Walter E. Clark (Ed.): Hinduism as Religion and Philosophy. A description of Hinduism touching on the lower popular cults and beliefs and practices which center around the worship of local godlings and village deities, the higher sects which worship deities of a more cosmic character; the theology or philosophy which makes a synthesis of these various deities and tends to think of this unity as impersonal; and finally, the social *dharma* which underlies all these and finds its expression in the caste system.

The Open Court—Vol. XLVII, No. 925: September, 1933.

Bruce W. Brotherston: Immediate Empiricism and Primitive Process Philosophy. An attempt to show that it is possible to arrive at the primitive human mental attitude. The author holds that there are two levels or poles in the *given* to reflective conation or spiritual urgency; one is that of process and the other that of unity in any and all stages of inclusion. In the primitive mental attitude both these poles, the author contends, are at once obvious. He endeavors to prove his point by tracing the beginnings of historic philosophy in their relations to prehistoric mental attitude. **James Taft Hatfield:** Goethe's Significance for the Present Century. An exposition of Goethe's ideals in the fields of letters, education, politics, ethics and religion. **Arthur E. Christy:** The Varying Influence of the Orient. A survey of Oriental influence on religious thought

in the West during the eighteenth and nineteenth centuries. The author thinks that at the present time our interest in the Orient is mainly industrial and scientific; our Western temper has little in common with the ancient Oriental mysticism. **Allen H. Godbey:** The Devil in Legend and Literature. A review of the book by Maximilian Rudwin in which the latter traces the history of the devil in legend and literature from the earliest time. The reviewer points out omissions and errors in the book and lays stress on points he feels the author should have more strongly emphasized.

The Personalist—Vol. XIV, No. 3: July, 1933.

Ralph T. Flewelling: Boethius: The Bridge From Ancient to Modern Culture. Out of the twilight of Roman history looms the serene and tragic figure of Boethius. His importance in the development of European thought and his right to the claim of being "the first modern personalist" are stated by the editor of *The Personalist*. Boethius is characterized as the bridge spanning the Dark and the Middle Ages from classicism to modernism. **Hartley Burr Alexander:** The Mystic Way. Mysticism is not a thing remote from the common experience of mankind. Three primary features are to be observed in philosophic mysticism. The first of these, viz., "the theory of the direct or intuitive nature of all authoritative knowledge", finds its exposition in this issue. The two remaining features await a subsequent issue for delineation. **Adam Alles:** Leibniz' Dual Conception of Human Reason. There are two positions in Leibniz as to the nature of human reason: one position is implicit and according to it reason spells "merely a very high degree of clearness and distinctness in a soul's perceptions, which again determines its rank as a dominant monad"; the other position is explicit and defines the nature of human reason as "a faculty which man alone possesses." **Ralph B. Winn:** The Distinction Between Truth and Knowledge. What is truth? This question has received various answers but none of these has proved adequate or satisfactory. A good definition of truth must embody two things: knowledge and reality. As his definition, Winn proposes: "Truth is reality as it is knowable."

The Personalist—Vol. XIV, No. 4: October, 1933.

Wilbur Long: Science, Piety and Professor Eddington. In an article appearing in *The Atlantic* of August, 1933, Mr. Hearnshaw Ward suggested that Professor Eddington has been darkly guilty of betraying the integrity of common sense and his calling in the somewhat questionable interest of piety. Dr. Wilbur Long takes exception to this criticism and in the course of his answer raises some fundamental questions concerning the aims and interests of both science and religion. **Hartley Burr Alexander:** The Mystic Way (II). This is the concluding portion of the treatise on philosophical mysticism. It unfolds the second and the third of the three primary features of mysticism. Feature number two is the conception of reality as a discoverable and shareable and by-the-good-impelled unity within our own lives; and feature number three—a doc-

trine of the Way, a discipline, which can be imparted, and which may lead him who follows it into the fullest realization of his own life. **H. T. J. Coleman:** "Socrates" on Leisure. Professor Coleman herein presents a dialogue in Platonic vein on the modern man's concept of leisure. **Philip P. Wiener:** Poe's Logic and Metaphysic. As a poet Poe has received a tardy recognition, but as a philosopher he has scarcely been recognized at all. Edgar Allan Poe's *Eureka—Essay on the Material and Spiritual Universe* details a logic and a metaphysic that justly merit for its author some portion of the philosopher's laurels.

The Philosophical Review—Vol. XLII, No. 4: July, 1933.

George A. Morgan: Wilhelm Dilthey. An example of the confusion of philosophy of the nineteenth century. The key to all his works: conflict between contemporary political and scientific aspirations and his own longing for a religious philosophy; acceptance of the irretrievable collapse of systematic theology and metaphysics; the determination to go beneath the systems to the inner life of history which produced them, finding there sure anchorage for an idealistic view of the world. Dilthey is in quest of a reality certainly not physical, the world of the human spirit and its works, something existing in or because of the souls of men. The result: a dualism in theory of knowledge; a Kantian positivism in regard to natural sciences; an ardent realism with respect to *Geisteswissenschaften*. He marks a low point in speculative thought. In what he began rather than in what he finished, lies the merit of Dilthey. **Eve T. Knower:** Lotze's Logic. "From the first to the last of the Logic the quest for knowledge or truth is pursued by an often confessedly paradoxical combination of a critical examination of our experience, thoroughly pragmatic in its method, with sudden excursions into metaphysical speculations, sometimes idealistic, sometimes realistic in character, dogmatically given but pragmatically checked." Lotze deals with four or perhaps five problems: The nature of truth; the methods of seeking it; its recognition; the relationship between the world of thought and the assumed physical world; the motives for seeking truth. The wisdom of Lotze lies in his recognition of the limitations of logical method . . . and in his continual, if unwilling proof of the tentative and uncertain character of all truth whatsoever, even the most self-evident. **Donald C. Williams:** Ethics as Pure Postulate. Proposes answers to the questions: What is a postulational system? What reasons can be advanced for supposing ethics to be such a system? What difference would result from the prevalence of this supposition? There can be no categorical imperative; still the theory of the purely postulational character of ethics does not justify indiscriminate skepticism and relativism.

The Philosophical Review—Vol. XLII, No. 3: May, 1933.

Mahendranath Sircar: Reality in Indian Philosophy. Philosophy in India not only means a reasoned system but implies a more profound sense of the intuition of truth. The Nyaya and the Vaiseshika form the realism

in Hindu metaphysics for they view ultimate realities as independent of our minds. They accept some supersensible realities but do not deny the objectivity of the sensible, although they do deny reality to the sensible in the sense of the reality of the super-sensible. Things are perceived directly, not through 'sensa'. In Vaishnavaism appearances are co-real with the Absolute; in Sankaraism the Absolute is static and identical Being; its supra-logical sense conceives reality as transcending and denying completely the world of appearance and attributes; in Saivaism there is a middle course: appearances are not co-real with the Absolute nor quite so ideal or illusory as Sankaraism supposes. The Ultimate Reality is indeterminate being. The ancient seers of India recognize the possibility of apprehending reality and truth in a direct way. If reason can yield systematic thinking, intuition can yield direct knowledge. **Raphael Demos:** The Rythm of Thought. Thought is a timeless relation of a timeless subject to a timeless object. There is no room for absolutism. Thought has two contrary features—change, novelty and purpose, direction. It is the stress between Definiteness and Indefiniteness, the unfolding of the indefinite into the definite and the return of the latter to the former. Movement and polarity are its characteristics. The cycle: from hypothesis to experiment and thence to a new hypothesis leading to new experiments endlessly; from idea to its expression, the expression itself returning upon the idea to enrich it. This cyclical progression constitutes the Rythm of Thought. **Rudolph Kagey:** The Meaning of Relations. The purpose of the essay is to clarify and analyze in brief the theory of relations in the writings of Francis Herbert Bradley. C. A. Bayliss, who is viewed as epitomizing all the "contemporary misrepresentations and misinterpretations of the position ascribed to the idealists, notably Bradley", is answered briefly. Relations obtain only between known facts—between objects of cognitive experience, or only where there is recognized a characteristic distinction between the observer as knower and the data or knowledge.

The Philosophical Review—Vol. XLII, No. 5: September, 1933.

Ralph M. Blake: Sir Isaac Newton's Theory of Scientific Method. Newton was in advance of his age in this regard. His achievement: he definitely denied to natural science the possibility of absolute certainty and finality. Likewise, he gives a clear account of the analytic-synthetic method of mathematical physics. The use of mathematical and deductive form, the attack upon hypotheses may seem to deny the first point; careful study dissipates the objection. Scientific conclusions are seen in the light of provisional approximations; they contain a high degree of probability only, and are open to revision. The false use of hypotheses alone is condemned. Newton actually employs hypotheses and calls them such. Newton and Descartes are contrasted. The strict mechanism of the latter is not attributable to Newton; mechanistic explanations and methods he attacks. As to the origin of principles and truths derived from them, the two disagree. Newton stresses the rôle of experience and experiment, and the provisional accuracy attained. If Newton emphasizes the ideal char-

acter of mathematical laws it is question rather of ascertaining how nature would operate in certain cases of ideal simplicity, than of knowing how it actually does act. Newton is more in accord with Francis Bacon, whose works he probably knew well and permitted to influence him. As to methods of induction and actual procedure, however, the two differ. Bacon's absolute certainty for science finds no favor with Newton. The latter's four Rules of Reasoning in philosophy are cited. From these his method may be gleaned. **Jared S. Moore:** The Problem of the Self. The three most general problems concerning the self are treated in turn. (1) Its inner nature. The 'I' as subject has been wholly neglected. As object it is known through consciousness; as subject, "transcendentally", i. e., not in experience; it is presupposed to make experience possible. It is "enjoyed", "realized", "lived". The true self is subject-object. These are two aspects of a single reality. The self is essentially a noumenon, a member of the realm of ends or spiritual values. (2) I and my Body. Transcendentalism upholds the main tenet of the double aspect theory. Mental and cerebral processes are ultimately identical; they are co-ordinate parallel objective manifestations of the 'I' or Subject-Self. Mind and body belong to the phenomenal order, spirit to the noumenal. Both mind and spirit are aspects of the soul, expressions of the one 'I'. (3) I and the World Beyond. The distinction varies accordingly as the self is viewed—e. g., the material, social, or spiritual self, etc. **Robert M. Ogden:** A Definition of Aesthetics. An effort to map the field of aesthetics, to show it as a science with its own method, with its own problems worthy of attention. Aesthetics is "the science of felt behavior." The field of study comprises "whatever an organism does, the criterion of which is an immediate experience uncontaminated by enumerative discernment."

The Philosophical Review—Vol. XLII, No. 6: November, 1933.

Albert G. A. Balz: Clauberg and the Development of Occasionalism. The occasionalistic teaching of the Cartesian, Clauberg is presented. By way of introduction the integrated world-view of the mediaeval mind is set forth at length. Changes were introduced at the beginning of the modern era, but if the theological and natural spheres were divorced, they retained all their individual force. God and nature both have their tasks to perform. It is suggested that this outlook plays a large part in the formation of Clauberg's occasionalism. It is noted that he was a Protestant theologian. The article is to be continued. **William Curtis Swabey:** Locke's Theory of Ideas. Commonly Locke is dismissed as a representative perceptionist. He is not, and "his doctrine of ideas have a totally different meaning from that frequently attributed to him." Locke is classed as an empiricist, yet he taught that "all knowledge of universal truths, as well as one's own existence, is founded in intuition." Locke's ideas are not mental phantasms; he teaches that all ideas are universals. A study of the definitions and the classification of ideas which he advances, makes this clear. The fact of his conceptualism does not deny this. It merely indicates that existentially ideas are not real things, but only as to signification or mean-

ing. Ideas are meanings; they are in the understanding and are not the constitutive forces of things. The definition of knowledge which he gives is imperfect, but he is saved from solipsism by admitting a more ultimate object of knowledge than the idea which is immediate. He did fail to distinguish properly between ideas and objects. It is pointed out what a rehabilitation of Locke's theory of knowledge would require. **Alice Ambrose:** A Controversy in the Logic of Mathematics. Is logic the substructure for mathematics? Is logic basic, and its laws final? The intuitionist school, represented by Brouwer and Weyl, answers negatively. Mathematical intuition is the genuine ground. Opposed is the logistic school — Frege, Peano, Russell, Whitehead, etc.—and the formalist school of Hilbert. These latter two, though agreeing upon an affirmative answer, offer diverse reasons for their stand. The arguments of both sides are stated and appraised.

The International Journal of Ethics—Vol. XLIII, No. 4: July, 1933.

A. Fiscus Liber and **David Weinman:** Standardization and Ethics. This article drawing analogy from one of the outstanding characteristics of our contemporary Western world, namely standardization, proposes a model moral man who might be a criterion of ethical imitation. By observing the diversity of intellectual ability and postulating that moral ability must be subject to the same diversity, the authors suggest that the standard set up be beyond the reach of all, so that every one in striving toward the goal might attain his maximum of endeavor. **Arnold H. Kamiat:** Toward a Philosophy of Democracy. The author bases his philosophy of democracy on a class of relationship that may be termed integrative. He defines integratic relationships as "a category of relationships that subsist among those objects that constitute unitary complexes, said objects being in the case of each complex united by the nexus that makes it a unique individual fact." There are five such relationships: the configurative, the consumptive, the instrumental, the compromise, and the co-ordinate. For humans, democracy first functions on the compromise level; it receives its development in the co-ordination level. The author does not maintain that these levels of integration succeed each other in an evolutionary manner; but does state that the evolution in question may take place, and for aught that we know to the contrary has taken place.

The problem that confronts modern society is that of achieving the transmutation of instrumental and concessional social-integration relationships into connections of a higher and more democratic nature. **Robert Withington:** Religio Medicorum Duorum. An apology for liberal Protestantism based on the remarks of Sir Thomas Browne and Oliver Wendall Holmes. The central theme is, "the kingdom of God is within you", which text to them validates individual interpretation and makes unnecessary any mediary body between them and God.

The International Journal of Ethics—Vol. XLIV, No. 1: October, 1933.

William Pepperill Montague: Philosophy as Vision. Mr. Montague maintains that the gap between the metaphysician's conclusions and the meager

data on which they are founded cannot be bridged by any logic of demonstration. Moreover, a materialistic conception of philosophy causes the author to assert that philosophy should surrender its position to the onrushing social and physical sciences. Therefore, continues Mr. Montague, since reason is not capable of safeguarding the field of philosophy, we should substitute for it imagination. Hence we have philosophy as vision, the only use for which it can justify its existence. **Carl F. Taeusch:** Reallocating Earnings and Wages. The broader criticisms of existing wage policies are not well founded and they must be reduced to more particular figures before they can be seriously considered. So the author holds, substantiating this opinion by the facts and figures which the United States Steel Corporation afford. **Leo Abraham:** The Logic of Ethical Intuitionism. A refutation of ethical intuitionism on the grounds that it is built on dialectic arguments which the author proves by a dialectic examination to be illogical. Mr. Abraham very clearly shows that while ethical intuitionism atempts to establish the objectivity of ethical characteristics, its arguments logically pursued would show them to be relative, i. e., subject to personal intuitions. **Van Meter Ames:** Apology for Aesthetes. For Mr. Ames no objective purpose of life is acknowledged, hence the aesthete, although he cannot give us any knowledge, can at least make us feel the purpose of our existence. The aesthete justifies his existence by his ability to appreciate art and his potentiality to become an artist. **Harold D. Lasswell:** The Problem of World Unity: In Quest of a Myth. The author gives a rather exhaustive list of psychological obstacles which must be surmounted before world unity can be conceived possible; then on psychological grounds shows these obstacles to be insurmountable. **Mahendra nath Sircar:** Social and Moral Ideas in the Upanishads. The anti-individual philosophy of the Hindu is the mould in which all social and moral principles are formulated. The primary social notion is that the differences, chiefly intellectual, which bring about social classes, are far less potent than the common unifying link of humanity. The central moral principle flowing from their philosophy is the superiority of truth over value. Truth is universal, whereas value has meaning in reference to the individual only. **T. V. Smith:** Oughtness and Order. An article which attempts to justify obedience to conscience while working on the assumption that the truth claim of moral judgments, and as a matter of fact conscience itself, cannot be accepted. Mr. Smith suggests the principle of the equality of all to be a supplement to conscience.

Speculum—Vol. VIII, No. 4: October, 1933.

J. M. Campbell: Patristic Studies and Middle English Literature. In order to appreciate the mediaeval English mentality and to gauge the spirit of Middle English literature, the author urges that investigators should be equipped with a well-founded knowledge of the Church Fathers. Merely tracing back the influence of the Fathers from Middle English literature is not sufficient although much good has resulted from these studies. One should have a more positive approach. It is necessary to use the progressive method. One should start out with an intimate

acquaintance with the Fathers and then more fruitful and more accurate results would follow. Obscure passages and commonly accepted ideas in Chaucer, Rolle and other writers of this period would be interpreted without tortuous reasonings and tremendous labor.

Revue d'Histoire de la Philosophie et d'Histoire Générale de la Civilisation—Nouvelle Série, Fasc. 1: 15 Janvier, 1933.

H. Jeanmaire: Introduction a l'étude du livre II du De natura deorum. For Cicero philosophy was secondary, a definite tool to be used by the orator. He is not deeply versed in any school; he is, rather, an eclectic, taking what suits his purpose best from the Epicureans, Zeno of Lidon, the Stoics, and the New Academy. In his philosophical writings he is a "vulgarisateur", an elegant compiler of philosophical ideas for the polite society of his time. But precisely this constitutes his value to us, for he faithfully reflects various ideas of Greek philosophers, whose original works have been lost. For many of his ideas in *De natura deorum* Cicero is indebted to his old master, Posidonius of Apanée, whom the author discourses at length. **Leo Spitzer:** Goethe et Racine. We must not suppose, as did M. Denis Saurat, that the *Iphigénie* of Goethe could have been written by Racine. A comparison of some of the dramas of Goethe with the corresponding works of Racine shows that, though externally they closely resemble each other, fundamentally they differ. Racine is the great poet of classical tradition; Goethe the great poet of individual culture. **Henri Gouhier:** Le premier maître d'Auguste Comte: Daniel Encontre. To him Comte dedicated *La Synthèse Subjective* saying to him: "To the venerable memory of my best teacher of mathematics, Daniel Encontre, born in the year 1762 at Nimes, died September 16, 1818, at Montpellier; professor of dogma and dean of the faculty of Protestant theology at Montauban. . . ." Comte pays him an elaborate tribute saying, among other things; "Votre enseignement scientifique fit spontanément surger le premier éveil de ma vocation intellectuelle et même sociale."

Revue d'Histoire de la Philosophie et d'Histoire Générale de la Civilisation—Nouvelle Série, Fasc. 3: 15 Avril, 1933.

Henri Potez: In Memoriam—Georges Lefèvre. The article is in reality the preface of the *Conferences, Enquêtes, et discours de M. le Doyen Georges Lefèvre.* Although Georges Lefèvre has left behind few written works, his teachings will not be forgotten; they live, and shall continue to live, printed on the hearts and minds of his disciples. He was a man who sympathized with human weakness and hesitated to utter words of discouragement. Interior freedom he defended, teaching that it must in no way be hampered. Greek influences are to be found in his writings. **J. G. Février:** La genèse de l'alphabet d'après les découvertes récentes. In the light of recent investigation it seems necessary to renounce the theory that the Phoenician alphabet originated, by a slow and automatic process, from the Egyptian system of writing. It is conceded, however, that the idea of a consonant alphabet did come from them. Some say that the Phoenicians produced the forms of their letters from an entirely original

principle, but this is contested. The author cites documents which antedate the Phoenician alphabet, as displayed in the inscription of D'Ahimram, to show that certain Phoenician letters were then in existence. The ultimate source of these letters the author also considers. **A. Adam:** Le libertinage de Th. de Viau. The author traces briefly the influences determining the opinions of Théophile and gives some indication of the extent of his influence on his contemporaries. It was in 1620, when Théophile turned to philosophy, that his ideas took on definite form. He did not reject the idea of a transcendental being, but insisted that this being was not the God of the Christians. Later this idea of a God is replaced by the idea of nature. Man must not flatter himself by believing that he was created to the image of God. He is a part of nature, and, like it, is subject to the blind laws of destiny. **René Jasinski:** Sur les "Deux Infinis" de Pascal. In studying Pascal we must consider also Gassendi, for from him Pascal received many of his ideas. This is especially true of Pascal's ideas on the two infinities. The author shows that they had already been expressed by Gassendi, and before him by Lucrèce. In spite of this fact the author states that it is correct to give the credit for these ideas to Pascal, and gives three reasons for his opinion:

(1) Pascal treats them more profoundly than the others.

(2) He treats of them more completely.

(3) He presents them in striking style, and with an appreciation of the beauties of nature. **René Hubert:** Introduction bibliographique à l'étude des sources de la science ethnographique dans "l'Encyclopédie." The author discusses the achievements and the needs of this field of study, and offers a bibliography that is certainly of interest to all students of the subject. **F. Préchac:** Erratum en vue de la 2nd edition du De Beneficiis. A supplement to the erratum of *De Beneficiis* (Paris, Belles-Lettres) which the author hopes will make this work a better subject for study and a little less defective. **Petit Courrier de Vaugelas:** Under this heading there are discussed linguistic problems of a more serious nature.

Cursus Brevior Psychologiae Speculativae. By Josepho Froebes. Paris: P. Lethielleux, 1933. Pp. iii + 455.

This book is an abbreviation of the author's two volume work *Psychologia Speculativa* published in 1927. The author is well qualified to combine the facts of experimental psychology with the doctrines of Aristotle and the Scholastics. He refers many times to his very well known work, *Lehrbuch der Experimentallen Psychologie*, to give the student the experimentally ascertained facts which justify his argument.

The book is divided into five sections with a total of fifty-two theses. It is clearly written and well arranged and offers the student an excellent course, which should be easily completed in the time ordinarily assigned to psychology in a two-year course of philosophy.

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